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THE DEVELOPMENT AND APPLICATION OF A SEMI-STRUCTURED INTERVIEW FOR THE ASSESSMENT OF AN INDIVIDUAL'S CAUSAL EXPLANATION FOR EMOTIONALLY SIGNIFICANT LIFE EVENTS

BY ©

BETTY JEAN ANDERSON

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND
RESEARCH IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF NURSING

FACULTY OF NURSING

EDMONTON, ALBERTA
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled The Development and Application of a Semi-Structured Interview for the Assessment of an Individual's Causal Explanation for Emotionally Significant Life Events submitted by Betty Jean Anderson in partial fulfillment of the requirements for the degree of Master of Nursing.

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Abstract

Coronary artery disease is ranked the leading cause of death in Canada. Panic disorder is the fifth most common clinical diagnosis in the primary care setting. Both biological and psychological factors are implicated in the etiology of both of these illness. The focus of this work is on psychosocial factors, specifically life events and causal explanations relative to the onset of coronary artery disease and panic disorder. The purpose of this scholarly endeavor was the development and application of The Interview of Causal Explanations for Emotionally Significant Life Events, a semi-structured interview aimed at the assessment of an individual's causal explanation for emotionally significant life events preceding the onset of a disease or disorder.

The Interview of Causal Explanations is aimed at the assessment of the cause of an emotionally significant life event. Probing questions are used to explore how the individual is thinking about the cause of the event on all dimensions of causal explanation: internality, stability and globality. This interview format was tested on seventeen subjects to assess emotionally significant life events that occurred in the year preceding the onset of coronary artery disease, panic disorder and/or depression. This brief and simple interview format was found to be a reliable means of assessing causal explanations for emotionally significant life events that were reported by these subjects. The content validity of the Interview of Causal Explanation is described.

An examination of data collected using the Interview of Causal Explanations revealed that six types of causal explanations were used by subjects to explain emotionally significant life events. Subjects were not consistent in their use of a type of causal explanation across life events or across time. An extension to the Explanatory Style theory is proposed on the basis of the findings from this work. Implications of these findings for both researchers and clinicians are discussed.

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LIST OF ABBREVIATIONS

ASQ	Attributional Style Questionnaire
CAD	Coronary Artery Disease
CAVE	Content Analysis of Verbatim Explanations
D	Depression
D/D	Disease/Disorder
DSM-III	Diagnostic and Statistical Manual, Third revision
E	External
G	Global
I	Internal
ICE	Interview of Causal Explanation
LEPODD	Life events preceding the onset of a disease or disorder
MESLE	Meaning of Emotionally Significant Life Events
MVA	Motor vehicle accident
#	Number
N	Number of subjects
PD	Panic Disorder
S/E	Subject Number/Event Number
Sp	Specific
St	Stable
U	Unstable

CHAPTER 1

INTRODUCTION

In this thesis the development and application of a semi-structured interview for the assessment of an individual's causal explanation for emotionally significant life events preceding the onset of a disease or disorder is described. This interview was developed for use in assessing life events preceding the onset of Coronary Artery Disease (CAD) and/or Panic Disorder (PD) although it is not limited in application to these disease/disorder populations. In this introductory chapter CAD and PD are defined along with the presentation of epidemiological data to document the importance of these illnesses. The focus of this scholarly endeavor is identified. This chapter concludes with an overview of this thesis.

Coronary Artery Disease

CAD is a progressive disease of the coronary arteries that results in their narrowing or complete occlusion (Urden, Davie & Thelan, 1992). The main cause of CAD is atherosclerosis or a build up of fatty deposits in the lumen of the coronary artery (Sokolow, McIlroy & Cheitlin, 1990). As atherosclerotic placque builds up in the coronary artery it disrupts the oxygen supply and demand balance resulting in the development of angina or chest pain (Urden et al., 1992).

Data from a 1987 Statistics Canada survey ranks cardiovascular disease as the leading cause of death for all ages in Canada, accounting for 77,000 deaths or 42% of all deaths in 1987. Of these deaths 46,000 or 25% were due to CAD (Statistics Canada, 1989a). The death rate for CAD per 100,000 Canadian males and females is reported to be 210.7 and 153.6, respectively (Statistics Canada, 1989b). In the United States approximately 500,000 people a year die from Coronary Heart Disease. This amounts to 50 - 75% of all deaths in the United States (Sokolow et al., 1990).

The staggering mortality rates for cardiovascular disease are attributed by some to the widespread prevalence of traditional risk factors including elevated blood pressure, smoking, dietary habits, obesity, blood lipids and physical inactivity (Statistics Canada, 1989a). However, these factors do not account for many new cases of CAD. Thus a broadened search for factors influencing the onset of CAD has led to the consideration of psychosocial factors (Jenkins, 1983). Psychosocial factors that have been the focus of research include social indicators, psychological factors and environmental characteristics (Krantz, Contrada, Hill & Friedler, 1988).

Panic Disorder

PD is a psychiatric condition classified as a subtype of anxiety disorder in the Diagnostic and Statistical Manual of Mental Disorders, third edition-revised (DSM-III-R). It is manifest by recurrent, discrete periods of severe apprehension or fear accompanied by at least four of the following symptoms: shortness of breath, dizziness, palpitations, trembling, sweating, choking, nausea, depersonalization or derealization, paresthesias, hot and cold flushes, chest pain, fear of dying, and fear of going crazy or doing something uncontrolled (American Psychiatric Association, 1987).

PD is reported as the fifth most common clinical diagnosis in the primary care setting (Barlow et al., 1984). One of the most comprehensive epidemiological studies reported in the literature is the Epidemiologic Catchment Area Study undertaken in the United States. This survey provides data for anxiety disorders defined using DSM-III criteria (Regier, Myers & Kramer, 1984). The six month prevalence data reported on three of the five Epidemiologic Catchment Areas (New Haven, Baltimore and St. Louis) revealed two major findings. First, the prevalence rates of PD, ranging between 0.6% and 1.0% in the community setting, were higher than expected. Secondly, the prevalence rate of PD in females was higher than expected at a rate as high as three times that found in males (Myers et al., 1984).

The field of PD is in the early stages of knowledge development. It wasn't until 1980 that PD was differentiated as a subtype of Generalized Anxiety Disorders (American Psychiatric Association, 1980) and 1987 that subtypes of PD were being differentiated (American Psychiatric Association, 1987). Continued investigation of both biological and psychosocial factors associated with the onset of PD is indicated in this new field.

Focus of this Thesis

Accepting the fact that both biological and psychosocial factors can be considered in the onset of CAD and PD, the focus of this work is on psychosocial factors related to the onset of CAD and/or PD. This focus was adopted to search for an answer to the following questions: Why does this particular patient with this particular set of circumstances at this particular point in time experience the onset of CAD? and Why does this particular patient with this particular set of circumstances at this particular point in time experience the onset of PD? It is fair to say that it is unlikely the biological component would change significantly from one day to the next in these patients. Thus it seemed as though the reason for the onset of the illness must lie outside the biological component and thus the focus was placed on the psychosocial component of CAD and PD.

Two important considerations relative to the onset of illness are life events and causal explanations. Although the influence of life events on the onset of both CAD and PD has received considerable attention by researchers, the findings reported in the literature were inconclusive. In the literature reviewed in Chapter 2, methodological inconsistencies, small and biased samples appeared to account for widespread discrepancies in reports on the relationship between life events and the onset of either CAD or PD.

Causal explanations for life events are considered to be important in the development of illness (Lin & Peterson, 1990; Peterson, 1988; Peterson & Seligman, 1987; Peterson, Seligman & Vaillant, 1988;

Seligman, 1991). However researchers have failed to identify a relationship between causal explanations for life events and the onset of PD (Kenardy, Evans & Oei, 1990). Causal explanations for life events preceding the onset of CAD have yet to be reported in the literature. Thus the focus of the work reported here is on an individual's causal explanation relative to emotionally significant life events that precede the onset of a disease or disorder. The purpose of this thesis was to develop and apply a semi-structured interview for assessing an individual's causal explanation for emotionally significant life events preceding the onset of a disease or disorder.

An Overview of this Thesis

In Chapter 2 the literature relative to life events and explanatory style is reviewed. The review of life event literature focuses on life events in relation to CAD followed by a review of life events in relation to PD. The theoretical foundation of explanatory style is presented. Explanatory style is then reviewed in relation to illness and in relation to specific diseases or disorders.

In Chapter 3 the Interview of Causal Explanation for Emotionally Significant Life Events (ICE) is presented. The ICE is a semi-structured interview aimed at the assessment of an individual's causal explanation for emotionally significant life events that precede the onset of a disease or disorder. The ICE was developed because of the limitations of existing tools designed to measure explanatory style. The development and application of the ICE is described in Chapter 3.

In Chapter 4 an extension of the explanatory style theory is proposed with the identification of eight theoretically possible types of causal explanation for emotionally significant life events. The six types of causal explanation reported for emotionally significant life events by subjects in this trial are identified and discussed. As well, the lack of the consistent use of a type of causal explanation for emotionally significant life events by subjects in this trial is identified and discussed. The implication of the findings of this work are discussed relative to research and clinical practice.

In Chapter 5 the conclusions and implications of this thesis are summarized. The summary is divided into two parts: 1) conclusions and implications relative to the ICE and 2) conclusions and implications relative to the types of causal explanation identified in this trial.

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CHAPTER 2

LITERATURE REVIEW

This literature review will focus on: 1) life events and 2) explanatory style. Life events in relation to CAD are reviewed followed by a review of life events in relation to PD. The theoretical foundation of explanatory style is presented. This is followed by a review of the literature on explanatory style focusing on: 1) explanatory style in relation to the onset of illness; and 2) explanatory style in relation to the onset of specific diseases or disorders.

Life Event Literature

Life Events in Relation to Coronary Artery Disease

Research on life events related to the development of CAD focuses on two broad categories of events, work related events and other life events. Thus, for the purpose of this review, the life event literature will be divided into two sections, work strain, including events related to the work environment, and other life events, which encompasses all life events not related to work.

Work Strain

Literature on the effects of the workplace on coronary heart disease has focused on work demand and control. Karasek, Theorell, Schwartz, Pieper & Alfredson (1982) developed a job strain model that can be used to characterize jobs in terms of job control and job demand. Job control is defined as the individual's latitude in job-related decision making and relates to autonomy. Job demand is defined as the psychological stressors inherent in the job including workload, unexpected tasks and job-related personal conflict (Karasek, 1979). The high demand/low control jobs were primarily blue collar. Job strain which results from high job demand accompanied with low control, is proposed to be associated with coronary heart disease. The authors of the model have demonstrated support for the model in earlier work (Johnson, Hall & Theorell, 1989) however, more recent work has not supported the model (Braun & Hollander, 1987; Johnson et al., 1989; Reed, LaCroix, Karasek, Miller & Maclean, 1989).

The job strain model has been refined to reflect the combination of job demand and individual need for control (Siegrist, Peter, Junge, Cremet & Seidel, 1990) and to reflect the combination of job demand, control and social isolation (Johnson et al., 1989). In both cases the refined models have been significantly associated with ischemic heart disease in blue collar men and cardiovascular disease in working men, respectively. Thus, individual perceptions and social support emerged as variables that influence the relationship between job strain and coronary heart disease risk.

One study that failed to find an association between job strain and ischemic heart disease attributes this largely to the fact that subjects' appraisal of job strain was measured and that this differs from objectively assigned values of job strain used in other studies (Reed et al., 1989). In addition, this study looked at the usual job rather than the current job in order to reflect the norm for the individual. Another study that measured individual's appraisals of job demand found increased risk of ischemic heart disease in the white collar Japanese workers who appraised their jobs to be demanding. The influence of family support did not influence the incidence of ischemic heart disease (Kayaba et al., 1990).

In conclusion, it appears as though the individuals' appraisals of job demands have an influence on the degree of job strain and thus the association between work strain and coronary heart disease. However, it is less clear what influence social support has on the relationship between work strain and coronary heart disease. Although there seems to be some consistency in the model used to study the relationship of work events to coronary heart disease, which has resulted in efforts to redefine the model, findings remain inconclusive. This is largely due to methodological inconsistencies, and the use of small and biased samples. The literature does not provide clear support for the relationship between work strain and coronary heart disease.

Other Life Events

Many studies on the relationship of life events to cardiovascular disease are reported in the literature. Many investigators report positive associations between the number of life events (Ely & Mostardi, 1986; Gupta & Verma, 1983; Magni et al., 1983), stressful life events (Bhatia, Tiwari, Balkrishna & Gupta, 1990) and the occurrence of myocardial infarction. Others report stressful life events to be related to myocardial infarction if interpreted in an emotionally adverse manner (Byrne, 1983). Still others report no association between acute life events and atherosclerosis (Tennant, Langeluddecke, Fulcher & Wilby, 1988). Life stress, based on the combination of a number of life events along with social isolation is reported to increase the risk of cardiac mortality by four times (Ruberman, Weinblatt, Goldberg & Chardhary, 1984).

Stressful life events reported significantly more often in myocardial infarction patients than controls were death of a close family member, major personal illness, financial loss, change in working condition, trouble at work, expansion of business (Bhatia et al., 1990) and family conflict (Bhatia et al., 1990; Gupta & Verma, 1983). A relationship between the type of life event, personality type and occurrence of myocardial infarction has also been reported (Ely & Mostardi, 1986; Bhatia et al., 1990).

Aside from quantity of life events, researchers have looked at objective and subjective quality of life events. Life events that are objectively rated as undesirable and uncontrollable are reported significantly more frequently by patients with myocardial infarctions than controls (Magni et al., 1983). Byrne (1983) found objective ratings of life events did not differentiate myocardial infarction patients from controls. However, when patients were permitted to judge the degree of emotional impact engendered by the life event, myocardial infarction patients reported higher distress than controls. Byrne (1983) suggests the emotional impact of life events is dependent on the individual interpretation and that myocardial infarction patients interpret life events in a negative manner.

The life event studies reviewed were fairly consistent in the use of control groups. However, small sample sizes combined with methodological differences particularly in tools used to measure life events and the retrospective nature of the studies may account for some of the discrepancies in the findings. Further, the retrospective nature of many of these studies limit the interpretations of the findings.

In conclusion, while the literature does provide support for a relationship between life events and coronary heart disease, the nature of the relationship is unclear. Although the individual's appraisal of the impact of the life event has been considered in relation to life events preceding the onset of CAD, individual differences have not received a great deal of attention. Further research is needed to clarify the role of life events in the development of coronary heart disease. Specifically, individual differences need to be explored in relation to life events preceding the onset of CAD. Explanatory style is one such individual difference factor.

Life Events in Relation to Panic Disorder

The literature on life events preceding the onset of PD, though limited in amount and inconsistent in findings, has concentrated on a few common aspects of life events and will be reviewed in relation to these common themes. First, literature related to the number of life events and temporal relationship to the onset of PD will be reviewed. This will be followed by a review of developmental and recent life events related to the onset of PD. Finally, more recent literature relating the impact of life events preceding the onset of PD to the meaning of the event will be presented.

Many authors have focused on the number of life events and temporal relation to the onset of PD. Investigators have reported a greater number of total life events in subjects developing PD (DeLoof, Zandbergen, Lousberg, Pols & Griez, 1989; Faravelli & Pallanti, 1989), as well as a greater number of life events in the month prior to the onset of PD (Faravelli & Pallanti, 1989). Other investigators report no difference in total number of life events in the development of PD but a greater number of life events experienced personally by the individual in the year prior to the onset of PD (Roy-Byrne, Geraci & Uhde, 1986b). Still other investigators report no difference in the total number of life events or number of recent life events before the onset of PD (Alnaes & Torgersen, 1989; Rapee, Litwin & Barlow, 1990).

The discrepancy in the reporting of life events in the literature may be a result of inconsistent methodologies. There was little consistency in life event scales utilized and inconsistency in both the use of comparison groups and the use of normal control groups. Although there was a high degree of consistency in use of DSM-III and DSM-III-R criteria for the definition of PD there was little consistency in the inclusion of subjects with pure PD only. Many studies included PD with varying degrees of agoraphobia, and others did not describe a breakdown of the PD inclusion criteria. Further, all studies were retrospective relying on individual recall of events over time.

Aside from research on the total number of life events, investigators have looked at developmental life events and the impact of life events on the individual. Developmentally, subjects fulfilling DSM-III criteria for PD have more grossly disturbed childhoods, including physical and sexual abuse, than generalized anxiety disorder subjects (Raskin, Peeke, Dickman & Pinsker, 1982). Individuals with PD describe frequent conflict with strict, domineering, overprotective fathers and perceived their childhood as unfavorable (Alnaes & Torgersen, 1989). Life events related to health and frequent change of residence, which may have led to isolation and precipitated the PD, were more frequently reported by PD subjects than by controls (Roy-Byrne et al., 1986b). Raskin et al. (1982) report anecdotally that 59% of PD subjects reported PD being precipitated by separation, with the onset of PD following leaving home or loss of a loved one. Other studies report that 28% of patients with PD experienced separation from one or both parent (Coryell, Noyes & Claney, 1983). Comparison of the developmental events reported in these studies is difficult due to inconsistencies in both measurement of life events and comparison groups used.

Not only do studies report the childhood environment to be associated with the development of PD, but childhood events are reported to have an impact on the individuals' cognitive style and thus alter the interpretation of later life events. Threatening events in childhood are associated with fear and are reported to predispose the individual to anxiety in later life when the individual is exposed to other threatening events (Ottaviani & Beck, 1987; Silove, 1987). In recent studies PD subjects have reported that life events had a more negative impact (Rapee et al., 1990) and they viewed life events as being extremely uncontrollable and as having highly adverse effects (Roy-Byrne et al., 1986b). Rapee et al. (1990) suggest that PD subjects have premorbid characteristics, that cause them to interpret events more negatively, and thus are vulnerable to the development of PD.

PD is also reported to be associated with recent life events. Commonly reported stressful life events occurring in the six months prior to the onset of PD are threatened or actual separation from an important person, change in job, pregnancy, move, marriage, graduation, death of a close person and physical illness. Individuals reporting spontaneous panic, most often report it to be precipitated by public speaking, stimulant drug use, family arguments or leaving home (Breier, Charney & Heninger, 1986).

Life events have also been investigated from the perspective of the objective meaning or impact of the event on the individual and the subsequent onset of PD. Faravelli & Pallanti (1989) examined loss events defined as "amount of personal (material or psychic) irreversible loss" (p. 623) associated with an event and threat events defined as "the degree of danger, uncertainty or risk" (p. 623) that would occur in the future as a result of the event. A rating scale was devised to rank the degree of threat or loss associated with an event as measured by the Paykel et al. Life Event Scale. Both threat and loss events were found to have a great impact on the development of PD, as defined by DSM-III criteria, with threat events having the greatest impact on the development of PD. Thirty to thirty-nine percent of cases of PD were reported to be attributable to life stress (Faravelli & Pallanti, 1989). Alnaes & Torgersen (1989) used a Social Readjustment Rating Scale to measure changes brought about by life events and reported no association between loss events, severity of stress and PD, as defined by DSM-III criteria. The absence of definitions of severity of stress and loss and the use of a different life event scale limit comparison of these studies and thus the inferences that can be drawn.

The role of loss in the development of PD is further investigated in a study of 33 subjects with PD, as diagnosed by the research diagnostic criteria for PD, who were divided into two groups: severe loss and no loss. The severe loss group had suffered death of a family member or loss of a supportive relationship. The no loss group had less severe separation including death of a relative or short separation from a family member. The occurrence of severe loss was not related to the severity of PD but was related to the occurrence of depression (Roy-Byrne, Geraci & Uhde, 1986a). These findings contradict Faravelli & Pallanti's findings, however different life event scales, rating scales of threat and loss and criteria for the definition of PD were used. In neither study did the investigators consider assignment of the severity of threat or loss based on the individual's perception.

No real conclusions can be drawn from the life event literature as it pertains to PD, for a number of reasons. First, findings are often inconsistent. Second, methodological inconsistencies in use of measurement scales, use of control groups and variability in comparison groups inhibit comparison of results. Finally, the retrospective nature of the studies limit the interpretations of findings. In view of the limitations noted in the life event literature, it is difficult to clearly define the effect life events have on the onset of PD.

It seems that researchers are beginning to consider life events preceding the onset of PD from the individual's perspective. Yet, they have not considered the individual difference factor explanatory style in relation to life events preceding the onset of PD. Thus, there is a need for research on explanatory style in relation to life events preceding the onset of PD. An attempt will be made to address this need in this thesis.

Explanatory Style Literature

This literature review will focus on: 1) the theoretical foundation of explanatory style; 2) the relationship of explanatory style to illness; and 3) the relationship of explanatory style to a specific disease or disorder. Due to the limited research reported in the literature on explanatory style in relation to PD and due to the absence of literature reported on the relationship of explanatory style to CAD this review presents research reported in the literature on the relationship of explanatory style to any disease or disorder.

Theoretical Foundation of Explanatory Style

Explanatory Style emerged from the reformulation of the learned helplessness model of depression as a modulator of learned helplessness (Seligman, 1991). The learned helplessness phenomenon, first observed in mongrel dogs and later in humans, is the helpless behavior exhibited by organisms exposed to uncontrollable, aversive events (Abramson, Seligman & Teasdale, 1978). This helpless behavior or giving-up follows from the belief that whatever you do doesn't matter (Seligman, 1991). However, after considerable research on learned helplessness as a theory applied to depression it was evident that individuals were inconsistent in the development of helpless behavior on exposure to uncontrollable, aversive events. The learned helplessness theory of depression was thus reformulated to incorporate explanatory style, or the individual's causal explanation for the occurrence of events, in order to explain this variation in human response to environmental events (Abramson et al., 1978).

Explanatory style has three dimensions: internality, stability and globality which relate to person, time and space, respectively. On the internality dimension the person may see the cause of the event as internal, due to something about himself/herself, or external, due to something about the environment or circumstances. On the stability dimension, the cause of the event may be either stable, a cause that will last forever, or unstable, a cause that is transient. On the globality dimension, the cause of the event may be either global, affecting several outcomes, or specific,and limited to the event of concern (Abramson et al., 1978).

The dimensions that characterize an individual's explanatory style influence the experience of learned helplessness for that individual. Internality affects self esteem loss; a cause that is internal is more likely to result in self esteem loss. Stability affects the chronicity of learned helplessness; a cause that is stable is more likely to result in a learned helplessness deficit that is long lasting. Globality affects the pervasiveness of learned helplessness; a cause that is global is more likely to result in a learned helplessness deficit that occurs in a variety of situations (Abramson et al., 1978).

Seligman (1991) has identified two explanatory styles that individuals use: optimism and pessimism. An individual who consistently uses a pessimistic explanatory style interprets the causes of bad events as internal, stable and global and the causes of good events as external, unstable and specific. Conversely, an individual who consistently uses an optimistic explanatory style interprets the causes of bad events as external, unstable and specific and the causes of good events as internal, stable and global. While any individual on exposure to a bad event will feel momentarily helpless it is the explanatory style that the individual consistently uses that determines the maintenance and consequences of these feelings of helplessness.

Seligman (1991) contends that individuals who consistently use a pessimistic explanatory style will on exposure to bad events maintain feelings of helplessness and become depressed. He posits that it is this depression that then alters the immune system and places the individual in a position of vulnerability to disease. In an investigation of the relationship of explanatory style to immune function Seligman and associates demonstrated that a pessimistic explanatory style was predictive of lowered immune function as measured through blood tests. Neither health nor depression level predicted immune function in this sample (Seligman, 1991).

Other researchers have attempted to define the role explanatory style plays in the development of illness. Lin and Peterson (1990) have explored the individual's behavioral response to illness and have observed that individuals with pessimistic explanatory style respond passively to illness. They conclude that a pessimistic individual may refrain from health seeking behaviors when faced with illness.

Explanatory Style in Relation to Illness

Research on the relationship of explanatory style to illness demonstrates that a pessimistic explanatory style puts people at risk for illness. In a prospective longitudinal study of 172 students explanatory style was assessed using the modified Attributional Style Questionnaire. As well, a self report illness scale was completed at entry into the study, four weeks later and one year later. Subjects with a pessimistic explanatory style reported more days ill and more doctors visits for the assessment of infectious disease during the course of the year (Peterson, 1988).

In another study by Lin and Peterson (1990), 96 students filled out the Expanded Attributional Style Questionnaire, provided retrospective recall of illness over the previous twelve months and completed a questionnaire on response to illness. A pessimistic explanatory style was positively correlated with the number of times ill during the twelve months surveyed. Individuals with a pessimistic explanatory style were also found to exhibit a passive behavior in response to illness.

Additionally, explanatory style measured using the Content Analysis of Verbatim Explanations (CAVE) has been linked to illness. The CAVE technique allows researchers to analyze an individual's explanatory style on the basis of a verbatim sample of some written or spoken material. In a 35 year longitudinal study of 99 university students from age 25 to 60, explanatory style was assessed in early adulthood using the CAVE technique. A pessimistic explanatory style was shown to be a risk factor for poor health in middle and late adulthood (Peterson, Seligman & Vaillant, 1988). The CAVE technique is also reported to have been used on historical quotes from a sports magazine, that were made by 94 members of the Baseball Hall of Fame . The explanatory style used by these baseball players was found to be related to mortality. Pessimists lived a shorter life (Peterson & Seligman, 1987).

Explanatory Style in Relation to Specific Diseases or Disorders

Few investigators have looked at explanatory style in specific disease groups. Seligman (1991) reports on an unpublished study of 34 women with a second bout of breast cancer who are being followed to the endpoint of death. These women were interviewed at length about their life, marriage, children, job, disease and treatment. These interviews were analyzed for explanatory style. The findings reveal that although surviving a second bout of cancer is unusual, those who lived the longest had optimistic explanatory style and some of them remain alive today, more than seven years later. Longevity in this study was independent of severity of illness.

The only psychiatric disorder in which explanatory style has been explored to any extent is depression. Research has focused on the association between explanatory style and depression in children and adults. Those studies that focus on children will be addressed followed by those studies that deal with adults.

A sample of 96 children were assessed for depression, using the Children's Depression Inventory, and for explanatory style using the Children's Attributional Style Questionnaire. Pessimistic explanatory style was highly correlated with high depression scores (Seligman, Peterson, Kaslow, Tannenbaum, Alloy & Abramson, 1984). A more recent study described an interaction between bad life events, explanatory style and depression measured in 168 school children over the course of a year. In this study a pessimistic explanatory style correlated with current depression and was also predictive of later depression (Nolen-Hoeksema, Girgus & Seligman, 1986).

In the adult population several researchers have looked at the relationship between explanatory style and depression. These studies commonly measure explanatory style using the Attributional Style Questionnaire. Several review articles conclude that the association between explanatory style and depression is inconsistent (Coyne & Gotlib, 1983; Peterson & Seligman, 1984; Peterson, Villanova & Raps, 1985). Sweeney, Anderson and Bailey (1986) reviewed the literature on explanatory style in depression and found that a pessimistic explanatory style had a reliable and significant association with depression.

The relationship between explanatory style and panic disorder was reported in only one study in the literature (Kenardy, Evans & Oei, 1990). Forty-nine patients presenting for treatment at an Anxiety Disorder Clinic were divided into two groups. Twenty-eight patients had panic disorder or agoraphobia with panic attacks. The remaining 21 had other anxiety disorders. Explanatory style was measured using the Attributional Style Questionnaire which was modified to include two questions concerning attributions for panic. Depression was measured using the Hamilton Clinical Rating Scale for Depression and the two groups were similar on Depression scores. The findings did not support an association between explanatory style and the development of panic disorder.

In summary, explanatory style is one individual difference factor that has been reported to be related to the onset of physical illness. The relationship between explanatory style and depression is inconsistent. In the only study reported in the literature on the relationship between explanatory style and panic disorder, there was no support found for an association between these two variables. The relationship between explanatory style and CAD has yet to be reported in the literature. Explanatory style offers a new perspective for examining the relationship between emotionally significant life events and the onset of CAD and/or PD.

Conclusion

The review of literature on life events was inconclusive in determining the role of life events in the development of either CAD or PD. The discrepancies in the literature reviewed appeared to be largely a result of methodological inconsistencies, small and biased samples. Researchers are beginning to consider life events preceding the onset of CAD and PD from the individual's perspective.

Explanatory style is one individual difference factor that has been described as a modulator between life events and ill health. Researchers have demonstrated that individual's who exhibit a pessimistic style for explaining the occurrence of events are at risk for poor health (Lin & Peterson, 1990; Peterson, 1988; Peterson et al., 1988). Explanatory style offers a new perspective for examining individual differences in relation to the explanation of emotionally significant life events that occur prior to the onset of CAD and/or PD. There is a need to explore the relationship between causal explanations made by individuals for those emotionally significant life events that occur prior to CAD and/or PD and the onset of CAD and/or PD.

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CHAPTER 3

THE DEVELOPMENT AND APPLICATION OF A SEMI-STRUCTURED INTERVIEW FOR THE ASSESSMENT OF AN INDIVIDUAL'S CAUSAL EXPLANATION FOR EMOTIONALLY SIGNIFICANT LIFE EVENTS THAT OCCUR PRIOR TO THE ONSET OF A DISEASE OR DISORDER[1]

When an event happens to an individual, the individual searches for an understanding of the cause by asking 'why' the event happened (Abramson, Seligman & Teasdale, 1978). The individual's answer to this question is their causal explanation for the event. Seligman (1991) states that individuals tend to be consistent in how they explain to themselves 'why' events happen. He calls these consistent patterns of explanation, explanatory style. Explanatory style has been linked to the development of a variety of diseases, disorders and to one's state of health in general (Kamen & Seligman, 1987; Lin & Peterson 1990; Peterson, 1988; Peterson & Bossio, 1991; Peterson & Seligman, 1984, 1987; Peterson, Seligman & Vaillant, 1988; Seligman, 1991; Sweeney, Anderson & Bailey, 1986).

Despite the wealth of literature on Explanatory Style investigators have yet to develop a reliable and valid tool that can be used by health researchers and clinicians to measure an individual's causal explanation for emotionally significant life events that occur preceding the onset of a disease or disorder (LEPODD). Such a tool is important to health researchers and clinicians interested in identifying the role that the individual difference factor causal explanation plays in the relationship between emotionally significant life events and the onset of a disease or disorder. Since erroneous causal explanations for desirable and undesirable hypothetical events have been posited in the etiology and maintenance of diseases and disorders (Abramson et al., 1978; Peterson & Bossio, 1991; Seligman, 1991) it is critical to measure those causal explanations that individuals make for LEPODD. Further, in view of the fact that Seligman (1991) posits that the type of causal explanation used by an individual can be changed, researchers and clinicians need to be able to measure an individual's causal explanation in order to develop intervention strategies that can be trialed to alter erroneous causal explanation. Consequently, the purpose of this scholarly endeavor was the development of a new semi-structured interview format for health researchers and clinicians to use to measure an individual's causal explanation for LEPODD.

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[1] A version of this chapter will be submitted to *Qualitative Health Research* for publication.

Theoretical Foundation of Explanatory Style

Explanatory Style emerged from the reformulation of the learned helplessness model of depression as a modulator of learned helplessness (Seligman, 1991). The learned helplessness phenomenon, first observed in mongrel dogs and later in humans, is the helpless behavior exhibited by organisms exposed to uncontrollable, aversive events (Abramson et al., 1978). This helpless behavior or giving-up follows from the belief that whatever you do doesn't matter (Seligman, 1991). However, after considerable research on learned helplessness as a theory applied to depression it was evident that individuals were inconsistent in the development of helpless behavior on exposure to uncontrollable, aversive events. The learned helplessness theory of depression was thus reformulated to incorporate the individual's causal explanation for the occurrence of events in order to explain this variation in human response to environmental events (Abramson et al., 1978).

An individual's causal explanation has three dimensions internality, stability and globality which relate to person, time, and space, respectively. On the internality dimension the person may see the cause of the event as internal, due to something about himself/herself, or external, due to something about the environment or circumstances. On the stability dimension, the cause of the event may be either stable, a cause that will last forever, or unstable, a cause that is transient. On the globality dimension, the cause of the event may be either global, affecting several outcomes, or specific, and limited to the event of concern (Abramson et al., 1978).

The dimensions that characterize an individuals causal explanation influence the experience of learned helplessness for that individual. Internality affects self esteem loss; a cause that is internal is more likely to result in self esteem loss. Stability affects the chronicity of learned helplessness; a cause that is stable is more likely to result in a learned helplessness deficit that is long lasting. Globality affects the pervasiveness of learned helplessness; a cause that is global is more likely to result in a learned helplessness deficit that occurs in a variety of situations (Abramson et al., 1978).

Seligman (1991) has identified two styles of causal explanation that he says individuals tend to use in a consistent manner to explain the causes of events: optimism and pessimism. An individual who consistently uses a pessimistic explanatory style interprets the causes of bad events as internal, stable and global and the causes of good events as external, unstable and specific. Conversely, an individual who consistently uses an optimistic explanatory style interprets the causes of bad events as external, unstable and specific and the causes of good events as internal, stable and global. While any individual on exposure to a bad event will feel momentarily helpless it is the explanatory style that the individual consistently uses that determines the maintenance and consequences of these feelings of helplessness. Seligman (1991) contends that individual's who consistently use a pessimistic explanatory style will on exposure to bad events maintain feelings of helplessness and become depressed. He posits that it is this depression that then alters the immune system and places the individual in a position of vulnerability to disease.

Measurement of Explanatory Style

There are two techniques for measuring explanatory style: content analysis of verbatim explanations - the CAVE technique, and the

Attributional Style Questionnaire (ASQ). Each of these techniques will be described along with a discussion of the measures of reliability and validity that have been established for these techniques. This is followed by a critique of the psychometric properties of the ASQ.

The CAVE technique utilizes verbatim samples of written or spoken material describing an event for which a causal explanation has been provided. Three independent raters then rate the event explanation on a seven point scale for each of the explanatory dimensions. An explanatory style profile is then constructed by averaging all event explanation units. The CAVE technique is useful for retrospective , longitudinal studies. The inter-rater reliability for composite scores of explanatory style were .80 for both good and bad events. Inter-rater reliabilities for individual dimensions were less adequate ranging from .48 to .95 across dimensions for good and bad events. The CAVE technique was found by researchers to correlate significantly with the ASQ (Schulman, Castellon & Seligman, 1989). The CAVE technique has been used to a lesser extent than the ASQ (Seligman, 1991).

The ASQ is a self report instrument which presents the subject with twelve hypothetical good and bad events (six interpersonal affiliative and six achievement) to which they are asked to respond with the major cause for the event. The subject then rates this cause on a seven point likert-like scale for each dimension of explanatory style: internal versus external; stable versus unstable; and global versus specific. Composite scores of explanatory style are derived by summing ratings across dimensions and across items (Peterson et al., 1982). The use of hypothetical events is argued by Peterson and Seligman (1984) to be congruent with the hypothetical nature of the causal explanation construct. They further argue that bad events represent uncontrollable events and that the inclusion of multiple events enables the identification of a cross-situational causal explanation or style.

Peterson and associates (1982) presented data to defend the construct, criterion and content validity of the ASQ. Despite the inclusion of data demonstrating high intercorrelations between the internality, stability and globality dimensions of explanatory style the implications of these results for construct validity are not attended to. The reliability of the ASQ was supported through the measurement of Cronbach's coefficient alphas for homogeneity. While coefficients for composite attributional style scales for good and bad events ranged .75 and .72, respectively, coefficients for individual dimensions were lower ranging from .44 to .69. Test-retest correlations of stability were reported to be .57 to .69 on all dimensions for good and bad events (Peterson et al., 1982).

The ASQ has been criticized for low reliability (Coyne & Gotlib, 1983; Cutrona, Russell & Jones, 1985; Pillow, West & Reich, 1991; Sweeney et al., 1986; Tennen & Herzberger, 1985; Zautra, Guenther & Chartier, 1985) and inadequate predictive and construct validity (Anderson, Jennings & Arnoult, 1988; Bagby, Atkinson, Dickens & Gavin, 1990; Cutrona et al., 1985; Zautra et al., 1985). Another review supports the validity of the ASQ and its broad application (Tennen &

Herzberger, 1985). Other researchers argue that the dimensions of attributional style have not been adequately examined independently or for interactions between dimensions therefore, the validity of calculation of composite scores for good and bad events across dimensions has been criticized (Bagby et al., 1990; Carver, 1989; Pillow et al., 1991). Finally, event types such as those included in the ASQ (achievement and affiliation) are argued to be insensitive to the assessment of actual causal explanations applied to real life events (Bagby et al., 1990; Brown & Siegel, 1988; Cutrona et al., 1985) and inadequate in the representation of all domains of life (Hammen & Cochran, 1981; Hammen, Krantz & Cochran, 1981; Russell, 1982). Acknowledgement of these limitations associated with the ASQ prompted the development of a new interview strategy to explore the individual's causal explanation for LEPODD.

Phase I: Development of the Interview of Causal Explanation

The Interview of Causal Explanation for Emotionally Significant Life Events (ICE) was developed by Anderson, Davis, McGillivray, and Schaumberger as one part of a larger interview format designed to aid subjects in the retrospective recall of emotionally significant life events and their meaning. The development and application of the ICE will be discussed in this article. The other part of the interview format, the Meaning of Emotionally Significant Life Events (MESLE), is reported elsewhere (McGillivray, 1992).

The ICE consists of a series of questions about an individual's causal explanation for LEPODD. The interview questions are based on causal explanation and dimensions of causal explanation identified to be characteristic of explanatory style (Abramson et al., 1978). The questions included in the ICE are similar to questions used by Peterson and associates (1982) in the ASQ. The goals of the ICE are: 1) to prompt the individual for a free response statement of their causal explanation for LEPODD; and 2) to use structured questions to probe those dimensions of causal explanation not provided by the individual in free response. In cases where more than one cause is identified for an event the subject is asked to identify the major cause. Dimensions of causal explanation related to the major cause are then explored (Peterson et al., 1982). Several interview questions and strategies were considered by the researchers and through this process the ICE questions displayed in Table 1 were derived.

Table 1

Interview of Causal Explanation for Emotionally Significant Life Events

The following questions are used to explore the causal explanation for emotionally significant life events identified by an individual.

1. Causal Explanation
   What was your causal explanation for why this event occurred? We all have different ways of explaining why things happen. I would like to understand your perspective.

(table continues)

2. Dimensions of Causal Explanation

   Internal/External

   Is this cause due to something you held yourself responsible for or did you see the cause being due to something outside yourself?

   Stable/Unstable

   Did you see this cause as permanent or never ending or did you see it as temporary, a cause that would not be present in the future?

   Global/Specific

   Did this cause color or affect every area of your life or just this one area?

The four researchers who developed the ICE trialed this new interview format by conducting one interview each on a volunteer known to have chest pain. The pilot interviews exposed problems related to eliciting information on the dimensions of causal explanation. First, there was a need to focus the subject during the interview to ensure dimensions of causal explanation reported related to the cause of the event and not to the occurrence of the event. Second, there were instances in which a dimension of causal explanation was self evident and direct questions were not required to elicit the information. For example, a causal explanation of death of a spouse is obviously permanent. Discussion about these special circumstances provided clarification on the ICE format amongst the researchers.

Phase II: Application of the Interview of Causal Explanation

A trial of the ICE was undertaken by the four researchers involved in the development of the interview format. The sample upon which the ICE was trialed is described. This is followed by detail on the interview procedure. The anchoring of dates of occurrence of life events and dates of onset of a disease or disorder is described. As well, the use of probing questions to explore causal explanation is discussed. Finally, the process used to extract data from the transcripts and to calculate inter-rater reliabilities is described.

Sample

The ICE was trialed on a convenience sample consisting of seventeen subjects who consented to participate in a larger Chest Pain Project (Davis, Schaumberger, Anderson & McGillivray, 1992). All subjects had chest pain and one or more of the following diseases or disorders: Coronary Artery Disease (CAD), Panic Disorder (PD), and Depression (D) (The research protocol for this project was reviewed and approved by the Ethics Review Committee of the Faculty of Nursing and University of Alberta Hospitals). The group consisted of nine females age 44-73 (mean age 59) and eight males age 44-64 (mean age 55.7). Twelve subjects were married, one widowed and four divorced, with one living in a common-law relationship. A diversity of educational backgrounds amongst subjects included four who had completed some secondary education but had not completed high school, three high school graduates, four high school graduates with post secondary courses, three college graduates and one university graduate. Data on education was missing for two of the subjects. The occupations and number of subjects in each occupation in parenthesis are as follows: janitor (2), housewife (1), trades (4), farmer (1), clerical (3), supervisor/manager (3), and retired (3). The subjects resided in various cities and towns throughout the province of Alberta.

Procedure

The subjects were contacted by an access letter which was followed by a telephone contact to arrange for the interview. The four researchers who were involved in the development of the ICE format travelled throughout the province of Alberta and conducted the interviews. Prior to beginning the interview process an informed consent was obtained from each subject. As well, the interviewer attempted to limit those in attendance at the interview to the interviewer and the interviewee. Finally, all subjects were requested to report any episode of chest pain in order that the interview process be terminated.

The ICE interview which was part of a larger Chest Pain Project was preceded by a one hour chest pain interview. At the end of the chest pain interview the interview process was interrupted by a fifteen minute break. Following the break the subject was interviewed for the occurrence of CAD, PD and or D, LEPODD and causal explanation for LEPODD.

Using the MESLE interview (McGillivray, 1992) the first task was to firmly anchor the date of onset of CAD, PD and or D. The interviewer used memory aids such as a life event calendar (Kessler & Wethington, 1991) and significant dates to provide the subject with the surrounding context in an attempt to enhance temporal memory (L. Sobell, Toneatto, M. Sobell, Schuller & Maxwell, 1990). After firmly anchoring dates of onset of each disease or disorder, the subject was requested to recall emotionally significant life events occurring in the year prior to the onset of each disease or disorder reported. The dates of occurrence of these life events were then firmly anchored using strategies described previously. Accurate dating of disease onset and occurrence of life events is critical to test the temporal aspects of the relationship of causal explanation for life events to the onset of a disease or disorder. Further, a test of the role of causal explanation for LEPODD as mediator, cause, symptom or consequence of a disease or disorder requires accurate dating of both disease onset and occurrence of life events (Alloy, Hartlage & Abramson, 1988).

After firmly anchoring dates of disease onset and occurrence of life events, the subject was interviewed using the ICE. For each life event identified, the interviewer asked the subject to go back in their mind's eye to the time of the occurrence of the life event identified and recall how they were thinking about the event at that time. The subject was then asked for their causal explanation of the LEPODD. At this point, the interviewer probed responses for factual content to determine events and distinguish causes (Kessler & Wethington, 1991). Once the cause had been determined as distinct from the event the interviewer proceeded with ICE questions to probe those dimensions of causal explanation which had not been identified by the individual.

In summary, the schematization displayed in Figure 1 serves to emphasize three important aspects of the ICE interview: 1) the need to firmly anchor the timing of the onset of a disease or disorder; 2) the need to anchor the recall of life events to the year prior to the onset of a disease or disorder and; 3) the need to focus the interview on the individual's causal explanation for life events. Establishing the anchor points and the individual focus of the interview are essential if researchers and clinicians are to use the ICE to further their understanding of the relationship between causal explanation for life events and the onset of a disease or disorder at the individual level.

Disease or Disorder Onset
|
Life Event(s) Preceding Onset of a Disease or Disorder
|
Causal Explanation Dimensions
Internality
Stability
Globality

Figure 1. A schematization of important steps in the Interview of Causal Explanation for emotionally significant life events preceding the onset of a disease or disorder.

Management of Data

Each tape recorded interview using the MESLE and the ICE lasted on average from one to one and one half hours and then was transcribed verbatim. Two researchers (who were also interviewers) analyzed each interview transcript independently and extracted content on life events, causal explanation and dimensions of causal explanation identified by the subjects. The purpose of extracting this content was two fold. First, to ensure accurate identification of all events, causal explanations and dimensions of causal explanation in each transcript.

Second, to ensure that researcher bias was eliminated through the use of the subjects' own words to apply one of the dichotomous causal dimension labels to each causal explanation for each event. For example, the internality dimension was labeled as internal or external based on what the patient actually said in the interview. Displayed in Table 2 are examples of causal explanation content extracted from the transcript for each life event and the label applied to each dimension of causal explanation based on the subject's response to the ICE.

Table 2

Causal Explanation for Emotionally Significant Life Events Reported by Subjects with Dimensions of Causal Explanation Labeled Based on Data from the Subject's Response

Subject #8	
Event	Farm credit foreclosing
Cause	I sprayed the crops and burned them and got behind in my payments because the crop yield wasn't there.
External	I didn't blame myself for that. It was because of a change to the metric system and also I think the chemical was more potent.
Stable	I killed the crops when I sprayed them.
Global	It affected every area of my life because of the financial impact and my payments started falling behind.
Subject #16	
Event	Being physically abused by common-law husband.
Cause	Alcohol, his illness.
Internal	I thought he was drinking because of me.
Unstable	I thought I could help him solve his alcohol problem, I didn't think it would go on forever.
Global	I lived in total terror of what he might do to me. I constantly dreaded going home from work for fear of what shape he would be in. I had to work extra jobs because he couldn't hold down a job.

Following independent analysis of content extracted from the transcripts, inter-rater reliabilities were calculated for each construct. To calculate inter-rater reliability the number of rater agreements on a construct was divided by the number of rater agreements plus disagreements on a construct (Polit & Hungler, 1987). The inter-rater reliability for life event and causal explanation were 100% and 83%, respectively. The internality, stability and globality dimensions had inter-rater reliabilities of 88%, 77% and 86%, respectively. These data provide evidence that the ICE can be used to elicit an individual's causal explanation and dimensions of causal explanation for emotionally significant LEPODD with a high degree of reliability. Russell, McAuley and Tarico (1987) reported that assessment of the dimensions of causal explanation identified by the individual provides the most valid assessment of these dimensions.

Findings

The findings of this study are presented in detail and discussed. This discussion focuses on the major variables assessed in the ICE interview including: emotionally significant life events, causal explanations and dimensions of causal explanation. To begin with, the data collected using the ICE are detailed in Table 3.

Table 3

Causal Explanation and Dimensions of Causal Explanation for Emotionally Significant Life Events Reported by Disease and/or Disorder Each Life Event Preceded and by Subject

#^{a}	D/D^b	Life Event	Causal Explanation	Dimension^c
1	D	Spinal Injury	Because I fell off a scaffold.	I/St/G
2	P	Daughter's move	Because of her return to school.	E/U/Sp
	D	Divorce	Because I had a husband who liked other women.	I/St/G
	C	Cousin's poor health	Because she had cancer.	E/St/Sp
3	C	Mother's death	Because of complications from surgery.	E
4	C	Firing friend	Because the other old biddies on the executive wanted to get rid of her.	E/U/Sp
5	C	Job loss	Because of the economy.	E/St/G
	C	Holding down many jobs	Because I was frightened about how I would support my children.	I/St/G
	C	Trying to maintain a mortgage on four houses	Because of the downturn in the economy. I need the houses as an inheritance for my children.	E/St/G
	C	Having to use strong chemicals at work	Because I had to work even though the chemicals were strong and may have damaged my heart.	I/St
6	C	Blurred vision	Because I got a whiff of hydrogen sulfide gas.	E/St/Sp
	C	Ringing in ears	Because I got a whiff of hydrogen sulfide gas.	E/St/Sp
7	C	Increased work	Because I had to learn this new computer software on top of my regular work.	E/U/Sp
8	D	Loss of election	Because the other candidate was spreading propaganda against me.	E/U/Sp
	D&C	Daughter's death	Because the physician was negligent.	E/St/Sp
	D&C	Farm foreclosure	Because I sprayed the crops with a new fertilizer and killed them.	E/St/G
9	D	Business in receivership	Because all my investments were going downhill.	I/U/G
	C	Work Promotion and things not going well	Because I had several new employees who had inadequate experience.	E/U/G
10	D	Stillborn baby	Because the Doctor made a mistake.	E/U
11	C	Heart attack	Because conflict with co-workers was causing great stress.	E/St/G
	D	Work conflict	Because of stress caused by co-workers behavior.	E/St/G

(*table continues*)

#[a]	D/D[b]	Life Event	Causal Explanation	Dimension[c]
12	P	Husband's depression	Because of circumstances beyond my control.	E/U/G
13	P	Wife ill	Because of a chronic back problem.	St
	P	Not working	Because I quit my Government job and couldn't find another job.	I/St/G
	P	Concerned about closing business for the winter	Because it was a seasonal business and I didn't think I'd have the cash flow to cover the overhead.	I
	P	Fight with wife	Because I procrastinated on moving a wood pile.	I/St
	D	Quit job	Because I couldn't stand the pressure. I was in over my head.	I
14	P	Going on a holiday	Because I lived like a hermit to afford it.	I/U
	P	Worried about son in Toronto	Because I didn't know what kind of trouble he was getting into.	U/G
	D	Lack of finances	Because I was on disability benefit and they [doctors] wouldn't let me work.	E/St/G
	D	Conflict with adult son seeking money from him	Because I was unwilling to financially assist him.	I
	D	Moving out of home	Because I couldn't afford to live there.	E/St/G
15	P	Things beginning to gel at home	Because I worked hard and figured it was paying off.	I
	P	Fear of stroke recurring	Because I believe we are predestined to events.	E/St/G
	D	Stroke, fear of persistent handicap	I blame myself for the stroke.	I/St/G
	D	Burning kettle and damaging stove	Because of early onset Alzheimer's disease.	I/G
16	D	Divorce	I blame myself.	I
	D	Children kidnapped by estranged husband	Because my ex-husband wanted custody.	E/St/G
	D&C	Abused by common-law husband	Because of alcohol, his illness.	I/U/G
	C	Left all alone after Dad's death	Because at the time of my divorce I isolated myself from the family.	I/St/G
	C	Father diagnosed with Cancer	Because he smoked.	E/St/Sp
	C	Son fighting back	I blame myself for staying in abusive common-law relationship.	I/St/G
	C	Hypertension	Because I inherited it, my mother had high blood pressure.	E/St/G

(table continues)

#[a]	D/D[b]	Life Event	Causal Explanation	Dimension[c]
17	C	Son's girlfriend in MVA	Because his girlfriend was careless. with son's vehicle.	E/U/Sp
	C	Daughter unhappy	Because of increased work demands.	E/U/Sp
	C	Hernia surgery	Because of lifting heavy objects.	E/U/Sp

Notes: [a] Subject Number.

[b] D/D = Disease/Disorder. D = Depression; P = Panic; C = Coronary Artery Disease.

[c] I = Internal; E = External; St = Stable; U = Unstable; G = Global; Sp = Specific

The data in Table 3 are discussed relative to each major section of the table. Beginning with life events, it can be seen that individuals were able to recall LEPODD. A total of 64 LEPODD were identified by the seventeen subjects. The most frequent number of LEPODD recalled per subject was three, with thirteen of the seventeen subjects recalling three or more LEPODD. Only those LEPODD for which an individual's causal explanation was explored are included in Table 3. The retrospective time frame over which these LEPODD were recalled ranged from one to forty-five years.

The next major category of data in Table 3 is causal explanation. Each emotionally significant life event was explored through the use of probing questions to establish the cause as distinct from the event. Through this process 46 (72%) of the 64 emotionally significant life events reported were explored for causal explanation. The causal explanation data was missing on the remaining 18 emotionally significant life events. The number of life events per subject that were explored for causal explanation ranged from one to as many as seven.

The final major category of data displayed in Table 3 are the dimensions of causal explanation for emotionally significant life events. Once a causal explanation was reported by the subject the interviewer proceeded with questions directed at probing the individual's explanation for each dimension of causal explanation. This exploration was successful for eliciting the dimensions of internality, stability and globality for 95, 85 and 76 percent of causal explanations, respectively. Except for two subjects, who were interviewed on only one event each, all subjects demonstrated an ability to respond to all questions on dimensions of causal explanation.

Summary, Conclusions and Implications

A brief summative discussion of the findings of this study are presented. This is followed by conclusions regarding the use of the ICE. Finally, this section concludes with implications for use of the ICE by researchers and clinicians.

Summary

Through an examination of the findings both strengths and limitations of the ICE can be identified. The strengths of this interview format are presented with a focus on methodological and therapeutic strengths. This is followed by a discussion of the limitations of the ICE including the dominance of negative event reporting by subjects and the intensity of the interview.

Strengths of the Interview of Causal Explanation

Using the ICE causal explanation for events outside the event domains typically explored with the ASQ questionnaire were reported. Events crossed a number of event categories including work, family (bereavement and conflict), illness (life threatening and chronic) and related to both interpersonal and intrapersonal domains. Researchers attest to the fact that different situations may be associated with different affective cognitions and thus actual life events rather than hypothetical events need to be included in research on causal explanation for disorders such as depression (Brown & Siegel, 1988; Cutrona et al., 1985; Hammen et al., 1981; Russell, 1991). Further, the dichotomy of hypothetical events into good and bad events may prevent complete identification of events of significance in examining individual difference in cognition (Cutrona et al., 1985). Allowing real event recall enables one to elicit events from more narrowly defined event classes such as health, work and family that were identified as significant to the individual.

In this trial, the utility of the ICE for retrospective recall of life events preceding the onset of a disease or disorder is demonstrated. The retrospective recall time span varied from one to forty-five years. Three subjects demonstrated a change in causal explanation over time by responding to questions on both the causal explanation and the dimensions of causal explanation with a now/then perspective. The now perspective represented how the subject was currently thinking about the cause of the event. The then perspective represents how the subject stated they used to think about the cause of the event. For example, in response to questions about the cause of her divorce, one subject stated that at the time she never truly understood what caused the divorce but she did blame herself. She went on to say that she now believes the cause of the divorce to be her husband's sexual problems and blames him. Since there may be a change in causal explanation over time there is a need to continually focus the subject on the need to recall how they were thinking about the event when it occurred.

The ICE allowed for the identification of the dimensions of causal explanation based on the subject's free response statement rather than having the researcher code the statement of causal explanation into dimensions. The identification of dimensions of causal explanation by the attributor is advocated by Russell (1991) who demonstrated that the individual's causal explanation may not be congruent with the researchers theoretical view. Referring to the data in Table 2, the researcher may have rated the internality dimension for the cause of the event identified by subject number eight as internal, and for subject number sixteen as external. Use of the data on dimensions of causal explanation identified by the attributor removed this validity issue from the ICE.

Besides the methodological strengths of the ICE, this interview format had one strength frequently reported by the subjects. Subjects commented that participation in the ICE interview had a therapeutic effect resulting from discussion of emotionally significant life events that they had often not talked to others about. Subjects commented that talking about events in the way they did in the interview helped them to attend to the way they think about events and helped them to develop a better understanding of the impact of these events on their lives. Despite the intensity of the interviews the majority of the subjects thanked the interviewer repeatedly for the opportunity to talk through the events.

Limitations of the Interview of Causal Explanation

The findings have evidenced several limitations of the ICE. Despite the intent to elicit information on causal explanation of both good and bad events, in accordance with the method used to examine explanatory style, the data on positive events is limited. Only two of the 47 events explored were positive events, the remainder were negative. Since only two of the subjects were currently depressed, the dominant recall for negative events is in contrast to research findings that demonstrate that depressed individuals report experiencing many negative outcomes and few positive outcomes in relation to non-depressed (Sweeney et al., 1986). It may be that the negative events are more salient to individuals irrespective of the underlying disease or disorder (Glickman, Hubbard, Liveright & Valciukas, 1990).

The intensity of the interview presented a limitation to the researcher in terms of the ability to maintain the interview focus. This is evident in the number of events that were not explored for causal explanation and the number of dimensions of causal explanation that were incompletely explored. Referring to Table 3, incomplete exploration of events usually occurred in cases where a large number of events had been identified. Due to the intense nature of the ICE interview in which numerous life events are reported, a second interview should be used for clarification of content and to ensure completeness of data. Cases of incomplete exploration of single events may relate to the inability of subjects to withstand the use of this interview in combination with other assessments such as the chest pain assessment undertaken in this study. It may be that in the future researchers should limit the interview to the MESLE and ICE content alone.

Conclusions

The ICE is a new semi-structured interview format that was developed to assess causal explanation for emotionally significant LEPODD. The ICE can be used as a reliable means of examining causal explanation for emotionally significant life events preceding the onset of CAD, PD and/or D. The content validity of the ICE has been identified. Unlike other tools that have been developed to assess causal explanation the ICE lends itself to use in both research applications and clinical settings.

From a research standpoint, it is recognized that the ICE needs to be tested on a larger sample to establish the psychometric properties of this interview format. There is a need to establish test-retest reliability and further inter-rater reliability. The content validity of the ICE has been described in this paper. The ability of the ICE to predict disease onset is an aspect of validity that needs to be established through further research. Likewise there is a need to examine the constructs of internality, stability and globality for independence. Since the dimensions of causal explanation identified by the subject during the ICE interview are analyzed independently, this interview strategy provides data on the constructs underlying causal explanation. These constructs should be examined independently and in interaction in order to enable examination of the theoretical base of causal explanation (Carver, 1989).

Following validation of the ICE this interview format has potential to be used with diverse groups of individuals in research on causal explanation. The ICE may be able to further the understanding of causal explanation for LEPODD. Building on this knowledge researchers then need to use the ICE to examine the role of causal explanation for LEPODD in the onset of a disease or disorder.

From a clinical standpoint, it is fair to suggest that clinicians can use the ICE to elicit an individual's causal explanation for LEPODD. In contrast to often complex and lengthy research tools, the simplicity and brevity of the ICE make it a tool particularly suited to clinical application. Clinicians in any health setting require only a limited understanding of causal explanation to be able to use the tool. Further, clinicians can be taught intervention strategies to use to alter an individuals causal explanation.

The two step interview process used in the ICE is important to ensure that clinicians assess not only the cause of the event but how the individual is thinking about the cause of the event on all dimensions of causal explanation. Through this in depth assessment clinicians can identify the individual's causal explanation for LEPODD and assess the accuracy of these causal explanations. This information can then be utilize by clinicians to guide the intervention strategies that they choose to modify causal explanations that are recognized to be erroneous or damaging.

Implications

The ICE is a tool that has implications for theory testing and for use by clinicians. The implications for theory testing are discussed relative to testing the theory linking explanatory style to health and testing the validity of the explanatory style construct. This is followed by implications for the development and testing of intervention strategies that clinicians can use to help patients alter erroneous or damaging causal explanations for LEPODD. These suggestions are not intended to be an exhaustive list of all possible implications but, rather, suggestions that may serve to stimulate the reader to identity other implications for the ICE in their own areas of research.

Implications for Research

An important application of the ICE is to the testing of the causal chain that Seligman proposes to link bad life events to poor health. This causal chain is displayed in Figure 2. A pessimistic explanatory style is described by Seligman (1991) as a modulator of helplessness which alters immune function and increases vulnerability to disease. Researchers need to test this model to determine if this causal chain is valid. If this causal chain is valid, there is a need to test intervention strategies to alter pessimistic explanatory style and examine the resultant effect on disease outcome.

BAD	- PESSIMISTIC	- Depression	- Decreased Immune	- DISEASE
EVENT	EXPLANATORY	(Helplessness)	Function	
	STYLE			

Figure 2. A schematization of Seligman's posited causal chain linking a pessimistic style of causal explanation to disease.

If a pessimistic explanatory style does not modulate helplessness and result in disease then the role played by causal explanation in the causal chain linking life events to the onset of a disease or disorder needs to be identified. A framework applied to testing cognitive theories of depression (Alloy, Hartlage & Abramson, 1988) can be applied to Seligman's model. Using this framework causal explanation may be a vulnerability factor that influences exposure to life events or influences the magnitude of the impact of life events on the individual. Further, life events may be symptoms or consequences of disease. This brings into question the sequential nature of the components in the causal chain and the possibility of interactions between the components. These relationships all need to be tested.

Not only does the posited causal chain linking explanatory style to health need to be tested but the explanatory style construct itself needs to be questioned for validity. Pessimistic explanatory style is consistent with 'depressive explanatory style' described by Peterson and Seligman (1984) in earlier work. In a recent meta-analytical review pessimistic causal explanation had reliable and significant associations with depression (Sweeney et al., 1986). Given this finding it is logical to question whether Seligman is measuring anything other than depression with his explanatory style construct. Further, it may be that the learned helplessness behavior (motivational, emotional and cognitive deficits) that is characteristic of depressed affect (Abramson et al., 1978) alters one's health seeking and health maintaining behaviors and thus disease onset. In other words, the validity of the explanatory style construct needs to be tested through use of the ICE.

The validity of the use of styles of explanation also needs to be questioned. Seligman has identified two styles of causal explanation, optimism and pessimism, that he says individuals tend to use in a consistent manner to explain events. These explanatory styles have been identified through causal explanations individuals offer for hypothetical events. Researchers need to examine causal explanations for actual life events to determine if individuals exhibit consistent types of causal explanation for actual LEPODD.

If individuals use consistent types of causal explanation for LEPODD then there is a need to identify what these types of causal explanation are. The types of causal explanation for LEPODD then need to be investigated to understand how they influence the onset of a disease or disorder. Finally, researchers need to examine these types of causal explanation for accuracy and develop intervention strategies to alter erroneous causal explanations.

If individuals do not use a consistent type of causal explanation for LEPODD, there is a need to identify what types of causal explanation individuals use for LEPODD. Researchers then need to examine what causes a change in the type of causal explanation that individuals make for LEPODD, for example, causal explanations may change across emotionally significant life events or across time. The role played by different types of causal explanation on the onset of a disease or disorder needs to be described. Finally, if types of causal explanation are linked to different diseases or disorders researchers need to examine strategies to alter causal explanation and the resultant effect on a disease or disorder.

Implications for Clinicians

The implications of the ICE for clinicians are discussed relative to assessment of causal explanations for accuracy and intervention strategies to alter erroneous causal explanations. The causal explanations that individuals make for LEPODD elicited using the ICE need to be examined for accuracy. Optimists tend to be accurate in their explanation of causes for events. Events often have more than one cause and the pessimist tends to identify the worst cause, a cause that is usually negative and inaccurate. Pessimists then catastrophize this inaccurate causal explanation for an event (Seligman, 1991). Clinicians need to validate the event assessment characteristics reported by

Seligman to be characteristic of pessimistic and optimistic causal explanations.

If clinicians, through the assessment of the accuracy of causal explanations, find erroneous causal explanations exist they need to examine how these erroneous causal explanations influence the onset of different diseases or disorders. If causal explanations for LEPODD are not erroneous they may be damaging due to the association of these causal explanations with various diseases or disorders. If erroneous and or damaging causal explanations for LEPODD are identified they need to be exposed to cognitive therapy techniques popular for the treatment of depression (Beck, Rush, Shaw & Emery, 1979; Evans & Hollon, 1988; Peterson & Bossio, 1991; Seligman, 1991) in an effort to identify intervention strategies to alter maladaptive patterns of causal explanation for LEPODD.

The implications discussed offer many directions for future research. This evidences the breadth of potential applications for the ICE. The ICE has been utilized to examine the types of causal explanation individuals make for emotionally significant life events. These findings are reported elsewhere (Anderson, 1992).

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CHAPTER 4

A NEW PERSPECTIVE ON DIMENSIONS OF CAUSAL EXPLANATION[2]

Causal explanation has traditionally been understood as an individual's understanding of the cause of events that happen to them (Abramson, Seligman & Teasdale, 1978; Weiner, 1974). Seligman (1991) has identified two types of causal explanation used by individuals: optimism and pessimism. He argues that individuals consistently explain the causes of events using either an optimistic or pessimistic type of explanation.

Seligman's (1991) two types of causal explanation are based on three dimensions of causal explanation, internality, stability and globality which relate to person, time and space, respectively. On the internality dimension the person may see the cause of the event as internal, due to something about himself/herself, or external, due to something about the environment or circumstances. On the stability dimension, the cause of the event may be either stable, a cause that will last forever, or unstable, a cause that is transient. On the globality dimension, the cause of the event may be either global, affecting several outcomes, or specific, and limited to the event of concern (Abramson et al., 1978).

An individual who consistently uses a pessimistic type of explanation interprets the causes of bad events as internal, stable and global and the causes of good events as external, unstable and specific. Conversely, an individual who consistently uses an optimistic type of explanation interprets the causes of bad events as external, unstable and specific and the causes of good events as internal, stable and global. Seligman suggest that the type of causal explanation that an individual uses influences their health.

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[2] A version of this chapter will be submitted to *Image: Journal of Nursing Scholarship* for publication.

While any individual on exposure to a bad event will feel momentarily helpless it is the type of explanation that the individual consistently uses that determines the maintenance and consequences of these feelings of helplessness. Seligman (1991) contends that individual's who consistently use a pessimistic type of explanation will become depressed. He posits that it is this depression that then alters the immune system and places the individual in a position of vulnerability to disease.

Recent work undertaken by this researcher indicates that there are more than two types of causal explanation used by individuals to explain the causes of life events. Not only are there more than two types of causal explanation but, an individual may not be consistent in his/her use of a type of causal explanation for all life events. This brings into question the assumptions upon which Seligman's optimistic and pessimistic types of causal explanation rest.

Theoretical Considerations for Dimensions of Causal Explanation

Two basic assumptions that underlie Seligman's theory of pessimistic and optimistic causal explanations are questioned. First of all, only two exclusive types of explanations for the causes of events are assumed to exist. Secondly, individuals are assumed to use a consistent type of causal explanation to explain why events happen to them.

An examination of the exclusive nature of Seligman's two types of causal explanation requires an examination of the dimensions of causal explanation. If one accepts that the constructs of internality, stability and globality are independent as Peterson & Seligman (1984) suggest, then the types of causal explanation are logically dictated by the number of unique combinations of these dimensions that can be constructed. Thus, it is possible to identify eight types of causal explanation; not two as Seligman (1991) suggests. These eight types of causal explanations, drawn to depict visually how each type is derived from the dimensions of internality, stability, and globality are displayed in Figure 1.

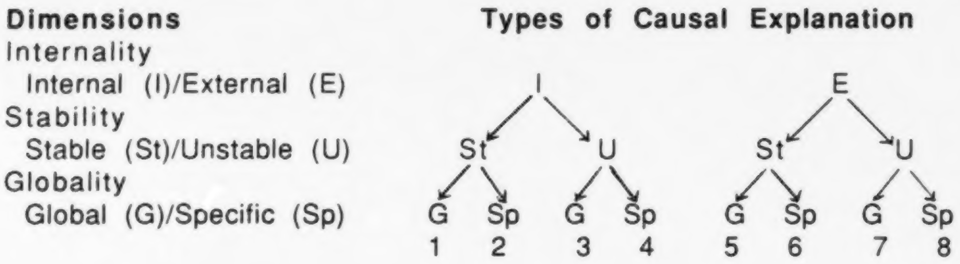
Dimensions
Internality
Internal (I)/External (E)
Stability
Stable (St)/Unstable (U)
Globality
Global (G)/Specific (Sp)
Types of Causal Explanation
I
E
St
U
St
U
G
Sp
G
Sp
G
Sp
G
Sp
1
2
3
4
5
6
7
8

Figure 1. A schematization of the eight types of causal explanation derived from the dimensions of internality, stability and globality.

In summary, the cause of an event is first of all explained on the internality dimension as internal (I) or external (E). The cause of the event is next explained on the stability dimension as stable (St) or unstable (U). Finally, the cause of the event is explained on the globality dimension as either global (G) or specific (Sp). If one considers the internality, stability and globality dimensions together there are eight possible types of causal explanation. These types of causal explanation are I/St/G; I/St/Sp; I/U/G; I/U/Sp; E/St/G; E/St/Sp; E/U/G; E/U/Sp.

Given the theoretical possibility of eight types of causal explanation, then one can question Seligman's reference to the consistent use of only two of these types of causal explanation. Presupposing that an individual in fact uses a consistent type of causal explanation for emotionally significant life events, then any one of the eight types of causal explanation could potentially be used in a consistent manner by that individual. Seligman has not defended the exclusive use of only an optimistic or pessimistic type of causal explanation by an individual.

If an individual does not use a consistent type of causal explanation to explain the causes of life events then the types of causal explanation used by an individual may be related to external factors. Thus, for example, it may be that situational factors play a larger role in determining causal explanation for actual life events than do dispositional factors. In contrast to this argument Peterson & Seligman (1984) contend that dispositional factors override situational factors in influencing causal explanation.

Recently collected empirical data supports six of the eight theoretically possible types of causal explanation. This data is explicated and discussed relative to the previous theoretical discussion. The specific focus of this discussion will be on the types of causal explanation used to explain emotionally significant life events and the consistency in use of a type of causal explanation by an individual.

Explication of Data

A pilot study was undertaken to examine an individual's causal explanation for emotionally significant life events using a new semi-structured interview format. The sample used for this study is described. This is followed by a discussion of the instruments used in the interview. Finally the procedure for the study is briefly described including a discussion on the management of data.

Sample

The convenience sample used in this study consisted of seventeen subjects who consented to participate in a larger Chest Pain Project (Davis, Schaumberger, Anderson & McGillivray, 1992). (The research protocol for this project was reviewed and approved by the Ethics Review Committee of the Faculty of Nursing and University of Alberta Hospitals). The group consisted of nine females age 44-73 (mean age 59) and eight males age 44-64 (mean age 55.7). Twelve subjects were married, one widowed and four divorced, with one living in a common-law relationship. A diversity of educational backgrounds amongst subjects included four who had completed some secondary education but had not completed high school, three high school graduates, four high school graduates with post secondary courses, three college graduates and one university graduate. Data on education was missing for two of the subjects. The occupations and number of subjects in each occupation in parenthesis are as follows: janitor (2), housewife (1), trades (4), farmer (1), clerical (3), supervisor/manager (3), and retired (3). The subjects resided in various cities and towns throughout the province of Alberta.

Instruments

Two new interview formats, the Meaning of Emotionally Significant Life Events Interview (MESLE), and the Interview of Causal Explanation for Emotionally Significant Life Events (ICE), developed by Anderson, Davis, McGillivray and Schaumberger, were used in the data collection process. The MESLE, a semi-structured interview format designed to aid subjects in the retrospective recall of emotionally significant life events and their meaning, was used to identify life events. The development and application of this interview format is reported elsewhere (McGillivray, 1992).

The ICE was then used to examine an individual's causal explanation for those emotionally significant life events identified by the individual. The development and application of this interview format is discussed in Chapter 2. In brief, the ICE is a semi-structured interview format that can be used by researchers and clinicians to assess an individual's causal explanation for life events.

Procedure

Four researchers who were involved in the development of the ICE format travelled throughout the province of Alberta and conducted the interviews. Prior to beginning the interview process an informed consent was obtained from each subject. Two aspects of the interview procedure of particular relevance to the accurate assessment of causal explanation will be discussed here. The reader is referred to Chapter 2 for a more detailed description of the entire interview process.

For each life event identified by the subject the causal explanation was explored in a two step process. In step one the interviewer explored the cause of the event. This was followed, in step two, by a series of questions directed at probing the specifics of the cause with respect to each one of the three dimensions of causal explanation, internality, stability and globality. The interview format is displayed in Table 1 with the questions related to step one and step two clearly labelled 1 and 2, respectively.

Table 1

Interview of Causal Explanation for Emotionally Significant Life Events

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The following questions are used to explore the causal explanation for emotionally significant life events identified by an individual.

1. Causal Explanation
   What was your causal explanation for why this event occurred? We all have different ways of explaining why things happen. I would like to understand your perspective.

2. Dimensions of Causal Explanation
   Internal/External
   Is this cause due to something you held yourself responsible for or did you see the cause being due to something outside yourself?
   Stable/Unstable
   Did you see this cause as permanent or never ending or did you see it as temporary, a cause that would not be present in the future?
   Global/Specific
   Did this cause color or affect every area of your life or just this one area?

Each tape recorded interview lasted on average from one to one and one half hours and then was transcribed verbatim. Two researchers, who were also interviewers, then extracted the following data from each transcript: emotionally significant life events, the causal explanation for each life event, and the dimensions of causal explanation for each life event (internality, stability and globality). The data extracted from the transcripts were examined for inter-rater reliabilities as described in Chapter 2. The inter-rater reliability for life event and causal explanation were 100% and 83%, respectively. The internality, stability and globality dimensions had inter-rater reliabilities of 88%, 77% and 86%, respectively. Russell, McAuley and Tarico (1987) reported that assessment of the dimensions of causal explanation identified by the individual provides the most valid assessment of these dimensions.

Findings

The findings of this study are presented in detail followed by discussion of the emotionally significant life events, causal explanations and dimensions of causal explanation reported by subjects. Exemplars of types of causal explanation reported by subjects are then presented to highlight the type of data reported on the dimensions of causal explanation. Finally, the dimensions of causal explanation are summarized into the different types of causal explanation actually reported by subjects. To begin with, the data collected using the ICE are detailed in Table 2.

Table 2

Causal Explanation and Dimensions of Causal Explanation for Emotionally Significant Life Events Reported by Subject

S/E[a]	Life Event	Causal Explanation	Dimensions[b]
1 / 1	Spinal Injury	Because I fell off a scaffold.	I/St/G
2 / 1	Daughter's move	Because of her return to school.	E/U/Sp
2 / 2	Divorce	Because I had a husband who liked other women.	I/St/G
2 / 3	Cousin's poor health	Because she had cancer.	E/St/Sp
3 / 1	Mother's death	Because of complications from surgery.	E
4 / 1	Firing friend	Because the other old biddies on the executive wanted to get rid of her.	E/U/Sp
5 / 1	Job loss	Because of the economy.	E/St/G

(table continues)

S/E[a]	Life Event	Causal Explanation	Dimensions[b]
5 / 2	Holding down many jobs	Because I was frightened about how I would support my children.	I/St/G
5 / 3	Trying to maintain a mortgage on four houses	Because of the downturn in the economy. I need the houses as an inheritance for my kids.	E/St/G
5 / 4	Having to use strong chemicals at work	Because I had to work even though the chemicals were strong and may have damaged my heart.	I/St
6 / 1	Blurred vision	Because I got a whiff of hydrogen sulfide gas.	E/St/Sp
6 / 2	Ringing in ears	Because I got a whiff of hydrogen sulfide gas.	E/St/Sp
7 / 1	Increased work	Because I had to learn this new computer software on top of my regular work.	E/U/Sp
8 / 1	Loss of election	Because the other candidate was spreading propaganda against me.	E/U/Sp
8 / 2	Daughter's death	Because the physician was negligent.	E/St/Sp
8 / 3	Farm foreclosure	Because I sprayed the crops with a new fertilizer and killed them.	E/St/G
9 / 1	Business in receivership	Because all my investments were going downhill.	I/U/G
9 / 2	Work promotion and things not going well	Because I had several new employees who had inadequate experience.	E/U/G
10 / 1	Stillborn baby	Because the Doctor made a mistake.	E/U
11 / 1	Heart attack	Because conflict with co-workers was causing great stress.	E/St/G
11 / 2	Work conflict	Because of stress caused by co-workers behavior.	E/St/G
12 / 1	Husband's depression	Because of circumstances beyond my control.	E/U/G
13 / 1	Wife ill	Because of a chronic back problem.	St
13 / 2	Not working	Because I quit my Government job and couldn't find another job.	I/St/G
13 / 3	Concern about closing business for the winter	Because it was a seasonal business and I didn't think I 'd have the cash flow to cover the overhead.	I
13 / 4	Fight with wife	Because I procrastinated on moving a wood pile.	I/St
13 / 5	Quit job	Because I couldn't stand the pressure. I was in over my head.	I
14 / 1	Going on a holiday	Because I lived like a hermit to afford it.	I/U
14 / 2	Worried about son in Toronto	Because I didn't know what kind of trouble he was getting into.	U/G
14 / 3	Lack of finances	Because I was on disability benefits and they [doctors] wouldn't let me work.	E/St/G
14 / 4	Conflict with adult son seeking money from him	Because I was unwilling to financially assist him.	I

(table continues)

S/E[a]	Life Event	Causal Explanation	Dimensions[b]
14/5	Moving out of home	Because I couldn't afford to live there.	E/St/G
15/1	Things beginning to gel at home	Because I worked hard and figured it was paying off.	I
15/2	Fear of stroke recurring	Because I believe we are predestined to events.	E/St/G
15/3	Stroke, fear of persistent handicap	I blame myself for the stroke.	I/St/G
15/4	Burning kettle and damaging stove	Because of early onset Alzheimer's disease.	I/G
16/1	Divorce	I blame myself.	I
16/2	Children kidnapped by estranged husband	Because my ex-husband wanted custody.	E/St/G
16/3	Abused by common-law husband	Because of alcohol, his illness.	I/U/G
16/4	Left all alone after Dad's death.	Because at the time of my divorce I isolated myself from the family.	I/St/G
16/5	Father diagnosed with Cancer	Because he smoked.	E/St/Sp
16/6	Son fighting back	I blame myself for staying in an abusive common-law relationship.	I/St/G
16/7	Hypertension	Because I inherited it, my mother had high blood pressure.	E/St/G
17/1	Son's girlfriend in MVA	Because his girlfriend was careless. with son's vehicle	E/U/Sp
17/2	Daughter unhappy	Because of increased work demands.	E/U/Sp
17/3	Hernia surgery	Because of lifting heavy objects.	E/U/Sp

Note. [a] S/E = Subject Number/Event Number

[b] I = Internal; E = External; St = Stable; U = Unstable; G = Global; Sp = Specific

The data in Table 2 are discussed relative to each major section of the table. Beginning with life events, it can be seen that individuals were able to recall emotionally significant life events. A total of 64 emotionally significant life events were identified by the seventeen subjects. The most frequent number of life events recalled per subject was three, with thirteen of the seventeen subjects recalling three or more events. Only those life events for which an individual's causal explanation was explored are included in Table 2. The retrospective time frame over which these life events were recalled ranged from one to forty-five years.

The next major category of data in Table 2 is causal explanation. Each emotionally significant life event was explored through the use of probing questions to establish the cause as distinct from the event. Through this process 46 of the 64 emotionally significant life events reported by subjects were explored for causal explanation. The causal explanation data was missing on the remaining 18 emotionally significant life events. The number of life events per subject that were explored for causal explanation ranged from one to as many as seven.

The final major category of data displayed in Table 2 are the dimensions of causal explanation. Once a causal explanation was reported by the subject the interviewer proceeded with questions directed at probing the individual's explanation for each dimension of causal explanation. This exploration was successful for eliciting the dimensions of internality, stability and globality for 95, 85 and 76 percent of causal explanations, respectively. Except for two subjects, who were interviewed on only one event each, all subjects demonstrated an ability to respond to all dimensions of causal explanation. The dimensions of causal explanation are displayed in summary form in Table 2 but warrant discussion in greater detail to highlight the significance of the actual data reported on these dimensions. This detail on the dimensions of causal explanation is provided in Table 3.

Table 3

Exemplars of Types of Causal Explanation for Emotionally Significant Life Events Reported by Subjects

Internal/Stable/Global (Pessimist)	
Event	Marriage breakdown leading to divorce.
Cause	Had a husband who liked other women.
Internal	Blamed herself for not being a good wife.
Stable	Husband had, had affairs before.
Global	For awhile she didn't think about anything else.
Internal/Unstable/Global	
Event	Being physically abused by common-law husband.
Cause	Alcohol, his illness.
Internal	I thought he was drinking because of me.
Unstable	I thought I could help him solve his alcohol problem, I didn't think it would go on forever.
Global	I lived in total terror of what he might do to me. I constantly dreaded going home from work for fear of what shape he would be in. I had to work extra jobs because he couldn't hold down a job.
External/Stable/Global	
Event	Farm credit foreclosing
Cause	I sprayed the crops and burned them and got behind in my payments because the crop yield wasn't there.
External	I didn't blame myself for that. It was because of a change to the metric system and also I think the chemical was more potent.
Stable	I killed the crops when I sprayed them.
Global	It affected every area of my life because of the financial impact and my payments started falling behind.
External/Stable/Specific	
Event	Daughter's move back to Ontario.
Cause	Daughter was going back to university.
External	She had taken as many courses as she could and had to go to Ontario to get the degree she wanted. So this was all planned.
Unstable	Going back to school was temporary, only until April and then she'll move back.
Specific	It hadn't affected every area of my life, we still talked on the phone and I have other friends.
External/Unstable/Global	
Event	Promoted at work and things were not going well.
Cause	Lots of new employees and everything was building up.
External	New employees had inadequate experience.
Unstable	I thought it would be time limited, they would learn.
Global	I brought work home with me and worried about things at home.

(table continues)

External/Unstable/Specific (Optimist)

Event	Firing friend.
Cause	Old biddies wanted to get rid of her.
External	The rest of the executive were responsible, had influenced some local lodges.
Unstable	They created a hornet's nest over this one issue.
Specific	I made a point of keeping this issue aside.

The exemplars of types of causal explanation, displayed in Table 3, are derived from actual data extracted from transcripts of the interviews. Focusing on the data reported by subjects for the dimensions of causal explanation brings the reader to a realization of the significance of assessing these dimensions. An assessment of the causal explanation alone provides insufficient information to assess the accuracy of an individual's causal explanation. The interviewer requires information gleaned through an assessment of the dimensions of causal explanation to fully understand the individual's understanding of the cause of the emotionally significant life event. Such an assessment provides the interviewer with the information required to assess the accuracy of the subjects causal explanation.

The dimensions of causal explanation reported by subjects can be summarized by types of causal explanation. Only those life events with complete exploration of all dimensions of causal explanation are included in this summary. Thus, along with the exclusion of several individual life events, both subjects number three and ten are excluded. This summary of dimensions of causal explanation is displayed in Table 4.

Table 4

Types of Causal Explanation for Emotionally Significant Life Events by Subject Number and Event Number

Subject #	Types of Causal Explanation					
	I/St/G (Pessimist)	I/U/G	E/St/G	E/St/Sp	E/U/G	E/U/Sp (Optimist)
1	1					
2	2			3		1
4						1
5	2		1;3			
6				1;2		
7						1
8			3	2		1
9		1			2	
11			1;2			
12					1	
13	2					
14			3;5			
15	3		2			
16	4;6	3	2;7	5		
17						1;2;3

Note. I= Internal; E = External; St = Stable; U = Unstable; G = Global; Sp = Specific
Data cross-referenced to Table 2 by subject number and event number.

As can be noted in Table 4, six types of causal explanation were reported by subjects in this study. The two types of causal explanation commonly reported in the literature, pessimistic and optimistic, were reported by subjects as well as four of the six remaining types of causal explanation that are theoretically possible. The two types of causal explanation not reported by any of the subjects in this study were internal/stable/specific and internal/unstable/specific.

Discussion, Conclusions and Implications

The discussion focuses on findings of this study relative to types of causal explanation made for emotionally significant life events. The limitations of this study relative to the interpretation of findings are identified. This discussion is followed by conclusions regarding causal explanations for emotionally significant life events reported by subjects in this study. Finally, this section concludes with a discussion of implications of these conclusions for both researchers and clinicians.

Discussion

In this discussion consideration is given to the types of causal explanation for emotionally significant life events not reported by subjects in this study. This is followed by possible explanations for those types of causal explanation for emotionally significant life events that were reported by subjects in this study. The inconsistency in use of a type of causal explanation by any one subject is then discussed. Finally the accuracy of causal explanation for emotionally significant life events reported by subjects is discussed. In concluding the discussion section the limitations of this study are identified.

Types of Causal Explanation Made for Emotionally Significant Life Events

Before discussing the types of causal explanation reported by subjects in this study, the two types of causal explanation not reported are hypothesized. This enables consideration of all eight types of causal explanation that are theoretically possible. In accounting for the types of causal explanation reported in this study two unique aspects of the ICE are proposed. First, the types of causal explanation reported by subjects in this study may have resulted from the interview focus which is on emotionally significant life events. Secondly, the causal explanations reported by subjects in this study may relate to the fact that the dimensions of causal explanation were explored independently. Both explanations are considered, in turn, along with a discussion of literature supporting the findings in this study .

Only six of the eight theoretically possible types of causal explanation were used by subjects in this study to explain the cause of emotionally significant life events. It is possible that given a larger sample the two remaining types of causal explanation, I/St/Sp and I/U/Sp, not reported by subjects in this study, would have emerged. In Table 5 hypothetical examples of the types of causal explanation not reported by subjects in this study are presented for the reader to consider the plausibility of these types of causal explanation.

Table 5

Hypothetical Data on Two Types of Causal Explanation for Emotionally Significant Life Events Theoretically Possible but Not Reported by Subjects

Internal/Stable/Specific	
Event	I failed my university entrance exam.
Cause	I didn't spend enough time preparing for it.
Internal	It was my fault, I should have studied harder.
Stable	I won't be able to go to university.
Specific	I can still go to college, and I can study accounting there.

(table continues)

Internal/Unstable/Specific

Event	Unable to go to work for six weeks.
Cause	Broken leg from a motor vehicle accident.
Internal	It's my fault that my leg is broken, I caused the accident with my careless driving.
Unstable	I get the cast off in six weeks and then I can go back to work.
Specific	I have difficulty getting around but that doesn't stop me from doing things.

Given the eight types of causal explanation, the six reported by subjects in this study and the two hypothetical examples, one possible explanation for these numerous types of causal explanation may relate to the focus of the interview. The ICE focuses on causal explanation for emotionally significant life events. Other tools measuring causal explanation for life events have traditionally focused on hypothetical events (Anderson, Horowitz & French, 1983; Ickes & Layden, 1976; Lefcourt, vonBaeyer, Ware & Cox, 1979; Peterson et al., 1982; Russell, 1982). There is difficulty generalizing causal explanation for hypothetical events to those made for real life events because hypothetical events are limited in personal meaningfulness (Gong-Guy & Hammen, 1980; Hammen & Cochran, 1981), fail to include the range of disruptive and stressful events that cross all domains of life (Cutrona, Russell & Jones, 1985; Hammen & Cochran, 1981) and fail to mimic everyday stressors by separating the event from other contextual factors in the individual's life (Coyne & Lazarus, 1980). Thus, the six types of causal explanation reported in this study may have emerged as a result of focusing on causal explanation for emotionally significant life events.

Those few researchers who have examined causal explanation for real life events have failed to find any relationship between causal explanations made for hypothetical life events and those made for real life events. Miller, Klee and Norman (1982) compared causal explanations for hypothetical, experimental and real events and found no consistency across events. They suggest that the causal explanation an individual makes for hypothetical and experimental events do not reflect cognitions for actual life events. Cutrona (1983) found that causal explanations for hypothetical events made by females in the third trimester of pregnancy did not predict causal explanations for actual life events occurring in the two weeks following delivery.

Another explanation for the six types of causal explanation found in this study may relate to the fact that dimensions of causal explanation were explored independently. This independent exploration of the dimensions of causal exploration is advocated by Carver (1989) to prevent loss of information that occurs through calculation of composite scores for measures that are conceptually distinct. Persons & Rao (1985) criticize composite scoring of causal explanation because they found that not all dimensions of causal explanation contribute equally to the prediction of depression. The types of causal explanation for life events that emerged in this study may have been obscured in other studies of causal explanation for real life events due to methodologies in other studies in which dimensions of causal explanation for real life events were summed across events (Cutrona, 1983; Gong-Guy & Hammen, 1980; Cochran & Hammen, 1985; Hammen, Krantz & Cochran, 1981; Harvey, 1981; Zautra, Guenther & Chartier, 1985) or across dimensions (Metalsky, Abramson, Seligman, Semmel & Peterson, 1982; Miller et al., 1982).

Inconsistency in the Type of Causal Explanation Made for Emotionally Significant Life Events

Not only were six types of causal explanation for emotionally significant life events reported by subjects in this study, but the subjects did not use a consistent type of causal explanation. The data from those few subjects who did exhibit a consistent type of causal explanation for emotionally significant life events are discussed. The finding of an absence of the use of a consistent type of causal explanation among subjects in this study is corroborated by findings of other studies undertaken to explore causal explanation for real life events. Finally, explanations for the lack of support for use of a consistent type of causal explanation for emotionally significant life events are discussed. Consideration is given to the fact that causal explanation may be influenced by the situation, the event salience, the number of life events, or by the age of the subjects.

The lack of consistency in use of one type of causal explanation by subjects will be discussed with reference to the data in Table 4. The majority of individuals who reported causal explanation for more than one emotionally significant life event used differing types of causal explanation across events. The type of causal explanation reported for emotionally significant life events did not appear to be influenced by time since, the inconsistency in type of causal explanation held across variable retrospective time frames. Subjects number six and eleven responded with the same causal explanation for the two events explored however, this was due to the fact that the cause of the events were the same in both cases for each subject. Subject number seventeen is the only subject who responded with the same causal explanation across events and time. This is the only subject who could be described to be exhibiting a consistent type of causal explanation for emotionally significant life events. These data suggest that the subjects interviewed in this study were not consistent in the use of a type of causal explanation across events or time.

The findings in this study are corroborated by research on causal explanation for real life events undertaken in both non-clinical and clinical samples. Amongst non-clinical samples researchers have undertaken longitudinal studies to explore the stability over time of causal explanation for real life events. These researchers were testing the stability of a pessimistic type of causal explanation for real life events amongst college students who were screened for the presence and absence of depression. Cochran and Hammen (1985) tested college students' causal explanation, for their five most stressful life events over a previous six month period, at two timing points separated by a two month time interval. They found that students reported diverse events and the causal explanation for real life events associated with depression changed over time. Zautra and associates (1985) measured causal explanation for real life events logged by college students over a fourteen day time period. Their data did not support the presence of a type of attribution that was consistent over time. These researchers question the stability of causal explanation for real life events.

Other researchers have examined the stability of causal explanation in clinical populations. Persons and Rao (1985) studied a clinical sample of depressed psychiatric in-patients and found that the individual's causal explanation for real life events changed over the course of the hospitalization and post-discharge follow-up. This change occurred despite the fact that these patients did not receive cognitive therapy directed at altering causal explanations. Not only is the stability of causal explanation for real life events questioned in clinical populations, but researchers have even questioned the stability of causal explanation for hypothetical events in these populations (Eaves & Rush, 1984; Hamilton & Abramson, 1983; Manly, McMahon, Bradley & Davidson,1982).

The absence of support for the use of a consistent type of causal explanation for real life events by subjects may be in part due to the suggestion that causal explanation may be situation specific (Cutrona et al., 1985). Researchers studying the link between causal explanation and depression have found that causal explanations do vary across situations. Harvey (1981) found internal explanations associated with depression following exam failure. Hammen and associates (1981) found globality was associated with depression following difficulties in romantic relationships. The emotionally significant life events reported by subjects in this study were diverse. Thus, specifics related to the types of situations may have influenced the types of causal explanation reported and the absence of a consistent type of causal explanation across events and time.

Alloy and Abramson (1988) state that individuals may have domains that are more salient to them and this salience may influence causal explanation across life events. One subject explained a divorce as global because her children would not have the traditional family institution. The family domain was of such salience to this subject that she felt the divorce would effect every part of her life. This example supports the influence of the salience of the life event on causal explanation.

Another explanation for the inconsistency in use of one type of causal explanation by subjects for emotionally significant life events may be related to the sheer number of events the subject was exposed to. Robins & Block (1989) found that causal explanation for upsetting events were related in part to the sheer number of events reported. They suggest that stressful life events have a cumulative effect and alter both an individual's vulnerability to future life events and explanations of the current life event. On exposure to numerous life events, the events may have similar contributory causes such that the cause of a particular event may be explained as global. Considering the event in the context of the person's life, this may be an accurate explanation.

The causal explanation reported by two subjects in this study may have been influenced by the cumulative effects of sheer numbers of events. For example, both subject numbers five and eleven described a causal explanation that contributed to more than one event as global. In the case of subject number five the economy was seen as a global cause that was effecting both her ability to hold down jobs and maintain multiple mortgages. Subject number eleven saw a conflict with co-workers that was influencing both health and work as global. In both of these cases the explanations were not distorted but accurate.

One final explanation for the inconsistency in the use of a type of causal explanation by subjects for emotionally significant life events may be related to the age of the sample (female mean age 59, male mean age 55.7). Research on causal explanation for real life events has typically been conducted with samples of college students (Cochran & Hammen, 1985; Hammen & Cochran, 1981; Hammen et al., 1981; Harvey, 1981; Metalsky et al, 1982; Zautra et al, 1985). The limited research on causal explanation for real life events in clinical populations has been on subjects less than forty years of age (Cutrona, 1983; Gong-Guy & Hammen, 1980; Hamilton & Abramson, 1983; Persons & Rao, 1985). It may be that causal explanation may be developmentally related and influenced by previous causal explanations made for other emotionally significant life events.

Accuracy of Causal Explanations Made for Emotionally Significant Life Events

The types of causal explanation for emotionally significant life events reported by subjects can be examined in more detail to assess the accuracy of the causal explanation. There is controversy in the literature over the accuracy of causal explanations made for life events amongst depressives (Evans & Hollon, 1988). An assessment of the accuracy of causal explanation using the ICE calls into question the labels applied to types of causal explanation.

There is controversy, arising from the literature on depression, over the accuracy of causal explanations depressed individuals make for life events. An individual using a pessimistic type of causal explanation is held to be overly negative in their appraisal of events, which creates a predisposition to erroneous explanations of noncontingency between effort and outcome and the development of depression (Abramson et al.,1978). Other researchers claim that depressives are more realistic and accurate in their explanation of events (Alloy & Abramson, 1979, 1988; Dobson & Franche, 1989). Dunning and Story (1991) argue that it is difficult to discern who is being realistic in laboratory studies because the different experiences individuals garner that influence interpretation of events are not taken into account in these artificial settings. They suggest the use of real life situations for future research on accuracy of explanation for life events.

In this study the ICE format focused on the individual's causal explanation for emotionally significant life events. The two step process used in the ICE to examine causal explanation enabled the interviewer to identify not only the cause of the event but more importantly how the individual was thinking about the cause of the event. Knowing how an individual explains the cause of an event on the dimensions of causal explanation allows one to judge the accuracy of the causal explanation for life events. For example, one subject described the life event of being left all alone after her Dad's death as a result of isolating herself from the rest of her family at the time of her divorce some years earlier. This isolation was something she held herself responsible for; it had gone on for years and she felt it would persist; and it affected all areas of her life because of the loneliness and lack of family support. This causal explanation is accurate yet the dimensions of causal explanation are I/St/G. This type of causal explanation is labelled by Seligman as 'pessimistic', a causal explanation which he describes as erroneous. This calls into question the labelling of types of causal explanation.

The inaccuracy of application of the 'pessimistic' label to accurate causal explanations raises the question of whether 'pessimistic' is an appropriate label for the causal explanation characterized by the dimensions of internal, stable, and global. It would seem as though it may be premature to apply labels to concepts about which so little is known. Until such time as the understanding of the types of causal explanation used by an individual to explain emotionally significant life events is advanced, it would seem more appropriate to apply neutral labels, such as numbers, to the types of causal explanation.

Limitations of This Study

In concluding this discussion section, the limitations of this study are discussed. Due to the retrospective nature of this study it is subject to the limitations of retrospective life event recall including memory bias and fall off in reporting of events (Glickman, Hubbard, Liveright & Valciukas, 1990; L. Sobell, Toneatto, M. Sobell, Schuller & Maxwell, 1990). Another limitation of this study is that the inability to identify a consistent type of causal explanation used by individuals may be related to the small number of life events for which causal explanation was explored for each subject. Researchers have suggested that a minimum of four to five real life events are required to constitute a consistent type of causal explanation (Schulman, Castellon & Seligman, 1989) However, anywhere from twelve to twenty-four hypothetical events are included in tools, such as the ASQ, which are designed to assess the consistency in an individual's causal explanation (Peterson et al., 1982; Peterson & Villanova, 1988). Finally, due to the nature of this pilot study the psychometric properties of the ICE interview format have yet to be established on a large sample thus exposing the data collected and reported in this thesis to criticisms of reliability and validity.

Conclusions

The conclusions are discussed relative to the types of causal explanation reported by subjects and the stability of causal explanation across events and time. Conclusions related to the ICE format are also discussed. These conclusions are discussed from both a research and a clinical perspective.

The data on causal explanation for emotionally significant life events collected using the ICE was examined for types of causal explanation reported by subjects. It was found that not only did subjects in this study use the two types of causal explanation identified by Seligman (1991), optimism and pessimism, but they also used four other types of causal explanation to explain emotionally significant life events. These six types of causal explanation reported by subjects in this study include I/St/G, I/U/G, E/St/G, E/St/Sp, E/U/G, E/U/Sp.

The types of causal explanation used by an individual in this study to explain emotionally significant life events changed across both event and time. Only one subject used a consistent type of causal explanation across both events and time. Therefore, these data do not support the use of a consistent type of causal explanation by an individual for emotionally significant life events.

The types of causal explanation for emotionally significant life events reported by subjects need to be assessed by clinicians in a systematic manner. First of all clinicians need to employ the two step process in the ICE. It is not enough to know just the cause of the emotionally significant life event. Clinicians need to know how an individual thinks about the cause of the event on all dimensions of causal explanation. Secondly, clinicians need to examine causal explanation for emotionally significant life events for consistency in use over time. Clinicians need to know if a consistent type of causal explanation is used by an individual or if the type of causal explanation is based on the significance of the event in the individual's personal domain. An assessment such as this enables the clinician to evaluate the accuracy of the causal explanation in order to identify erroneous or damaging causal explanations that need to be altered through clinical interventions.

From a research perspective, these findings are not generalizable due to the pilot nature of this study and the small sample size. The findings warrant replication of this study on a larger sample in an exploratory descriptive fashion in order to identify all types of causal explanation that are used to explain emotionally significant life events. Further, there is a need to question the stability of causal explanation for emotionally significant life events across both events and time.

From a clinical perspective, clinicians can utilize the findings from this pilot study to broaden their understanding of types of causal explanation individuals use to explain emotionally significant life events. Clinicians can use the ICE in the clinical setting to examine the types of causal explanation individual's report for emotionally significant life events and assess the accuracy of these causal explanations. Clinicians can then assess the consistency in use of a type of causal explanation by an individual.

Implications

The implications of this study are considered from both a research and a clinical perspective. The implications for research focus first on the description of causal explanations for emotionally significant life events. Secondly, the implications for research on causal explanation for emotionally significant life events and the onset of a disease or disorder are discussed. In considering the implications for clinicians the focus is on the consideration of individual differences in causal explanation and the need to assess the accuracy of these causal explanations. Hypothetical causal explanations are considered relative to a life threatening event to demonstrate the potential diversity in causal explanations amongst individuals. The accuracy of these hypothetical causal explanations are assessed and consideration is given to the impact of these individual causal explanations on intervention strategies directed at a rehabilitation program.

Implications for Research

The findings of this study have implications for research on causal explanation for emotionally significant life events. Through the use of an exploratory descriptive study six types of causal explanation for emotionally significant life events were identified rather than two. These findings imply that researchers may have proceeded too quickly in their design of experimental studies to explore types of causal explanation before these types of causal explanation have been fully described. Experimental research on pessimistic and optimistic types of causal explanation continues despite the suggestions from this study that the types of causal explanation may not be limited to these two types. This study suggests that researchers may not have yet defined all types of causal explanation or provided adequate support for the consistent use of one type of causal explanation by an individual.

Coyne and Lazarus (1980) discussed the need for purely descriptive studies of causal explanation for real life events over a decade ago. There is a need for further research of an exploratory descriptive nature to replicate the types of causal explanation identified in this study and to establish all types of causal explanation individuals use to explain emotionally significant life events. Not until all types of causal explanation are sufficiently defined by researchers would it seem appropriate to move to experimental modes of inquiry.

The types of causal explanation, once identified need to be examined for stability across both time and event. If causal explanation changes across time there is a need to know what factors contribute to this change. There may be factors specific to the individual, such as age, sex, or education; to the type of event; or to the situation. Researchers need to determine all of the factors that may influence causal explanation.

Once the causal explanation and dimensions underlying causal explanation have been clearly defined, causal explanations for emotionally significant life events need to be examined in relation to the onset of a disease or disorder. While some researchers have examined the relationship between causal explanation for real life events and depression they have used cross-sectional designs (Gong-Guy & Hammen, 1980; Hammen & Cochran, 1981; Hammen et al., 1981; Harvey, 1981; Metalsky et al., 1982; Miller et al., 1982; Zautra et al, 1985). The cross-sectional design does not allow researchers to examine causation. Researchers examining the relationship between causal explanation and illness have also relied largely on a cross-sectional design and continue to focus primarily on the causal explanation for hypothetical events as a predictor for illness (Lin & Peterson, 1990; Peterson, 1988; Peterson & Bossio, 1991; Peterson &

Seligman, 1987; Seligman, 1991). Only one study reported in the literature has looked at causal explanation for real life events in a longitudinal fashion (Peterson, Seligman & Vaillant, 1988). Thus, research to date examining causal explanation for life events and the onset of a disease or disorder has either failed to test the causal relationship of these variables or has failed to focus on real life events.

Researchers need to design studies that will enable them to examine the causal relationships between causal explanation for emotionally significant life events and the onset of a disease or disorder. Using a framework applied to testing cognitive theories of depression (Alloy, Hartlage & Abramson, 1988), there is a need to identify if causal explanations for emotionally significant life events are the cause of illness, a vulnerability factor predisposing an individual to an illness or a symptom or consequence of the illness. If causal explanations for emotionally significant life events are a cause of a disease or disorder then there is a need to identify if specific types of causal explanation relate to specific diseases or disorders.

If causal explanations for emotionally significant life events are not the cause of a disease or disorder, then they may be a symptom or consequence of disease or disorder. There is a need to examine the link between a disease or disorder and the development of the causal explanation for emotionally significant life events in order to identify how these causal explanations develop. If factors are identified that mediate the development of causal explanations following a disease or disorder then these mediators need to be explored to identify intervention strategies that may be used to alter these mediators and thus alter the onset of a disease or disorder.

Once the relationship between causal explanation for emotionally significant life events and the onset of a disease or disorder is clarified there is a need for researchers to explore the accuracy of these causal explanations. If these causal explanations are erroneous or damaging then intervention strategies need to be developed to alter these causal explanations. The consequence of alteration of causal explanation on the onset of a disease or disorder then needs to be explored in a controlled fashion to validate the efficacy of these techniques.

It is evident from the preceding discussion that there is much research yet to be done in order to determine firstly, the types of causal explanation individuals make for emotionally significant life events and secondly, the relationship of causal explanation for emotionally significant life events to the onset of a disease or disorder. This exploratory descriptive study has contributed to the field of causal explanation by beginning to describe the types of causal explanation for emotionally significant life events. Further exploratory descriptive work is required to clarify the types of causal explanation used by individuals for emotionally significant life events. Only when researchers have sufficient knowledge of the types of causal explanation made for emotionally significant life events should they continue with more advanced analytical research of causal explanation in relation to the onset of a disease or disorder.

Implications for Clinicians

The findings of this study have implications for use by clinicians. An awareness of the causal explanation an individual makes for emotionally significant life events has implications for clinicians working with individuals exposed to events such as a life threatening illness. The clinician's understanding of the individual's causal explanation for the life threatening illness derived through use of the ICE has implications to influence the design of teaching and rehabilitation programs targeted at the individual's needs. At present, rehabilitation programs are often targeted at the group level and look beyond the way individuals differ from each other.

Hypothetical examples of the six types of causal explanation reported by subjects in this study are applied to a common emotionally significant life threatening event, a heart attack, to illustrate the importance of an assessment of causal explanation by clinicians. These examples, displayed in Table 6, serve to illustrate the potential diversity in causal explanation amongst individuals for the same life threatening event. A discussion of these examples serve to illustrate the assessment of causal explanation for accuracy and intervention strategies clinicians can use to alter erroneous causal explanations. The relevance of an assessment of causal explanation by clinicians involved in the development of a rehabilitation program is also discussed.

Table 6

Hypothetical Examples of Six Types of Causal Explanation for a Heart Attack

1. Event:	I had a heart attack.
Cause:	I found my wife dead in the kitchen and developed this sudden crushing chest pain.
External:	She died suddenly of an aneurysm.
Stable:	She's dead.
Global:	We did everything together and now my life's not worth living.
2. Event:	I had a heart attack
Cause:	Fight with co-workers.
Internal:	I couldn't stand how poorly they did their work so I told the boss.
Unstable:	I don't fight with anyone else.
Global:	The fighting will never end, they're trying to force me out now by making me look bad and I need my job. I'd never get another job if I lost this one.
3. Event:	I had a heart attack.
Cause:	Work strain and increased work demands.
Internal:	It's my fault, I take on extra work because I can't say no.
Stable:	I always take on extra work because I don't want to lose my job.
Global:	I work hard at everything I do.
4. Event:	I had a heart attack
Cause:	My diet.
External:	It's not my fault, I eat whatever they have in the cafe.
Unstable:	My wife cooks good meals for me at home.
Specific:	My diet has just affected my heart.
5. Event:	I had a heart attack.
Cause:	My diet is too high in cholesterol.
External:	I didn't know that I should decrease my cholesterol intake.
Stable:	I don't have time to prepare meals so I eat my meals in restaurants.
Specific:	My diet has just affected my heart.
6. Event:	I had a heart attack.
Cause:	Lack of exercise.
External:	I broke my leg two years ago and haven't been exercising since.
Unstable:	I do walk to the bus stop in the morning.
Global:	I'll never get into an exercise routine again, and look at the weight I've put on.

The discussion that follows will focus on the examples from Table 6 discussed either independently or comparatively. Cognitive therapy strategies directed at altering erroneous causal explanations are incorporated into this discussion. These strategies include correcting the following: arbitrary inferences, overgeneralizations, magnification and personalization (Beck, Rush, Shaw & Emery, 1979).

Referring to example number one and two, Table 6, these individuals demonstrate a causal explanation that is specific to the actual situation. In both cases because of the salience of the cause to the individuals they explain it as global. Clinicians need to recognize that this is inaccurate in both of these cases and work to alter this erroneous causal explanation. In both cases the individuals needs to correct the erroneous overgeneralizations made on the globality dimension and replace it with a more specific explanations.

In example one the individual needs to identify those activities in which he can find alternate partnership and continue to participate in these activities. This will help him to avoid the loneliness that will result from resigning himself to the fact that his life is not worth living. Loneliness has been shown to link causal explanation to illness (Anderson, Horowitz & French, 1983). This individual is demonstrating a giving-up attitude which may interfere with motivation toward health seeking behavior. The clinician must alter this attitude before the implementation of any interventions directed at cardiac rehabilitation.

The individual in the second example has not only overgeneralized the explanation but may be taking undue responsibility for the event. Again the clinician must identify these erroneous explanations and correct them. These erroneous explanations may prevent the individual from taking a problem solving approach to the underlying problem. Once the explanations are corrected the individual can be assisted in the development of a problem solving approach to deal with the situation. Poor problem solving ability may relate to increased exposure to bad life events and increased illness (Peterson & Seligman, 1987). These problem solving difficulties must be resolved before the implementation of any cardiac rehabilitation teaching since this rehabilitation may require the individual to solve problems related to the alteration of lifestyle.

The causal explanation provided in example three may be inaccurate. If it is erroneous, the causal explanation needs to be altered to correct the overgeneralizations on the internal dimension and magnifications on the stability dimension. The person in this example may be drawing a conclusion with no basis. There are times when it may be appropriate for the individual to decline work, and the individual's job is unlikely to be in jeopardy as a result of this action.

If the causal explanation described in example three is accurate and consistent it demonstrates a passive response. This response of passivity may be generalized and demonstrated in relation to cardiac rehabilitation. Underlying passivity is implicated to be a helpless response that may contribute to failure to seek medical advice (Peterson & Seligman, 1987). Clinicians need to recognize the implications of a passive causal explanation and design a rehabilitation program which individualizes supervision. A passive individual may need more immediate supervision with gradual withdrawal of this support.

The causal explanation provided in examples number four and five both relate to a common cause, that of diet. In comparing these two causal explanations only one dimension differs yet the individual's explanations of the event differ dramatically. These differences in causal explanation need to be understood by the clinician in order to identify and correct erroneous causal explanations. Contrasting these two examples highlights the importance of assessing the dimensions of causal explanation and considering this information in the design of cardiac rehabilitation programs that are individualized.

In example number four the poor diet is blamed on the cafeteria and seen only to affect the heart. These are erroneous causal explanations that need to be corrected. This individual's attitude toward health is neglectful, an attitude that has been linked to illness (O'Leary, 1985). The correction of the causal explanation made in this example has implication for altering this individual's attitude toward health. If this individual does not assume any responsibility for diet it is unlikely that counselling on cardiac diet regime would be effective in altering the dietary intake of an individual such as this.

The causal explanation offered in example five is accurate on all dimensions except for the globality dimension. On the globality dimension diet is explained incorrectly as affecting only the heart. If this causal explanation is corrected this individual may increase the significance placed on diet. This change in causal explanation may influence the receptiveness of this individual to modification of the diet. In contrast to the individual in example four, the attitude of the individual in example five is not neglectful but uninformed. Considering this individual difference, the individual in example five would likely be more receptive to counselling on the cardiac diet regime.

Finally, in example six the individual exhibits an accurate causal explanation on all dimensions except the global dimension. The global dimension is overgeneralized. This causal explanation needs to be corrected to enable the individual to view exercise as a realistic part of this individual's weekly routine. If this causal explanation goes uncorrected, a cardiac rehabilitation program that attempts to increase involvement in exercise would have little likelihood of motivating this individual towards involvement.

These few examples provide some insight into the clinical relevance of examining causal explanations individuals make for emotionally significant life events. In assisting an individual to adapt to a life threatening illness the clinician must understand the individual's causal explanation for the event and assess the accuracy of this causal explanation. If the causal explanation is accurate the clinician needs to design rehabilitation programs that are individualized to the idiosyncrasies of the individual's causal explanation. Alternatively in the event that causal explanations are erroneous the clinician needs to correct the underlying cognitions before preceding with health teaching and rehabilitation programs.

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CHAPTER 5

SUMMARY OF CONCLUSIONS AND IMPLICATIONS

This study involved the development and application of the Interview of Causal Explanation (ICE), a semi-structured interview format for the assessment of an individual's causal explanation for emotionally significant life events preceding the onset of a disease or disorder. The ICE was trialed on seventeen subjects to investigate the utility of this new interview format. All of the subjects had chest pain and may or may not have had CAD, PD, and/or D. The data derived through this trial was then examined to identify the types of causal explanation individual's report for emotionally significant life events. In this summary the conclusions and implications that relate to the ICE as an assessment tool will be presented. This is followed by the conclusions and implications that relate to the types of causal explanation reported by individual's for emotionally significant life events.

The Interview of Causal Explanation

The ICE was used to assess the causal explanation made by an individual for emotionally significant life events that occurred prior to the onset of CAD, PD and/or D. Causal explanation is assessed through a two step process in the ICE. Step one focuses on eliciting the cause of the event. While step two focuses on probing how the individual thinks about the cause of the event on all dimensions of causal explanation.

The conclusions related to the utility of the ICE are:

- The ICE provides a reliable means of assessing causal explanation for emotionally significant life events preceding the onset of CAD, PD and/or D. The content validity of the ICE is described.

- The ICE allows for the independent assessment of dimensions of causal explanation for emotionally significant life events. This is important for examination of the constructs underlying causal explanation in theory testing.

- The simplicity and brevity of the ICE make it a tool particularly suited to clinical application. Clinicians can use the ICE to assess causal explanations reported by individuals for emotionally significant LEPODD.

- The use of a two step process such as that in the ICE is important to ensure that clinicians assess not only the cause of the event but how the individual is thinking about the cause of the event on all dimensions of causal explanation. This in depth assessment is essential to enable clinicians to judge the accuracy of an individual's causal explanation for an emotionally significant LEPODD.

The implications for use of the ICE by researchers are:

- The ICE lends itself to application in theory testing. Specifically, the ICE can be utilized to test Seligman's posited causal chain linking a pessimistic type of causal explanation for bad events to disease.

- The ICE is applicable to a test of the linear nature of the components of Seligman's causal chain. The precise role played by a pessimistic causal explanation for an event in the causal chain linking pessimistic causal explanation for bad events to illness needs to be identified.

- The ICE is applicable to test the validity of Seligman's explanatory style construct.

- The ICE is applicable to exploration of the types of causal explanation an individual makes for LEPODD and the consistency in use of a type of causal explanation by an individual.

- The ICE is applicable to test the relationship between causal explanations for LEPODD and the development of a disease or disorder.

The implications for use of the ICE by clinicians are:

- The ICE can be used by clinicians to assess the causal explanations made by individuals for LEPODD. These causal explanations can then by assessed for accuracy and consistency. Erroneous of damaging causal explanations for LEPODD can then be altered by clinicians through the use of cognitive therapy strategies.

Types of Causal Explanation

The data gathered through a trial of the ICE were examined for types of causal explanation reported by individuals. These types of causal explanation were then examined for consistency in their use by an individual across both events and time.

The conclusions related to types of causal explanation are:

- Six types of causal explanation were used by individuals in this study to explain emotionally significant life events. These include: I/St/G, I/U/G, E/St/G, E/St/Sp, E/U/G, E/U/Sp.

- The types of causal explanation used by individuals in this study to explain emotionally significant life events changed across both event and time.

- Clinicians can utilize the ICE to assess causal explanation in a systematic manner. An assessment of causal explanation such as this enables the clinician to identify: the type of causal explanation used by an individual to explain emotionally significant life events; the accuracy of the individual's causal explanation; and the consistency in use of a type of causal explanation by an individual over time.

The implications for researchers of the conclusions related to types of causal explanation are:

- The need for further exploratory descriptive research to identify all types of causal explanation individual's make for emotionally significant life events.

- The need for replication of this research to examine the stability of the different types of causal explanation across both events and time.

- The need for research to examine factors that contribute to the development of causal explanation for emotionally significant life events.

- The need for research to examine factors that contribute to a change in causal explanation over events and time.

- The need for longitudinal research to examine the relationship of causal explanations for LEPODD to the onset of a disease or disorder. Specifically, there is a need to identify the role played by causal explanation for LEPODD in the onset of a disease or disorder.

- The need to identify what type of causal explanation is associated with what type of disease or disorder.

- The need for research to examine the accuracy of causal explanations made by individuals.

- The need for research to examine strategies to alter erroneous or damaging causal explanations.

- The need for research to examine the effect of strategies to alter erroneous or damaging causal explanations on the resultant occurrence of a disease or disorder.

The implications for clinicians of the conclusions related to types of causal explanation are:

- The need to assess patients for the use of any one of the six types of causal explanation identified in this study.

- The need to assess the type of causal explanation used by a patient for accuracy and consistency in use by that individual.

- The need to utilize strategies to alter erroneous or damaging causal explanations once these maladaptive causal explanations have been identified.

- The need to individualized health teaching, health promotion and rehabilitation programs based on an assessment of the individual's causal explanation for the event that is prompting the health seeking behavior.

- The need to correct erroneous or damaging causal explanations prior to the implementation of health teaching, health promotion and rehabilitation programs since the individual's causal explanation may influence the receptiveness of the individual to teaching and rehabilitation.